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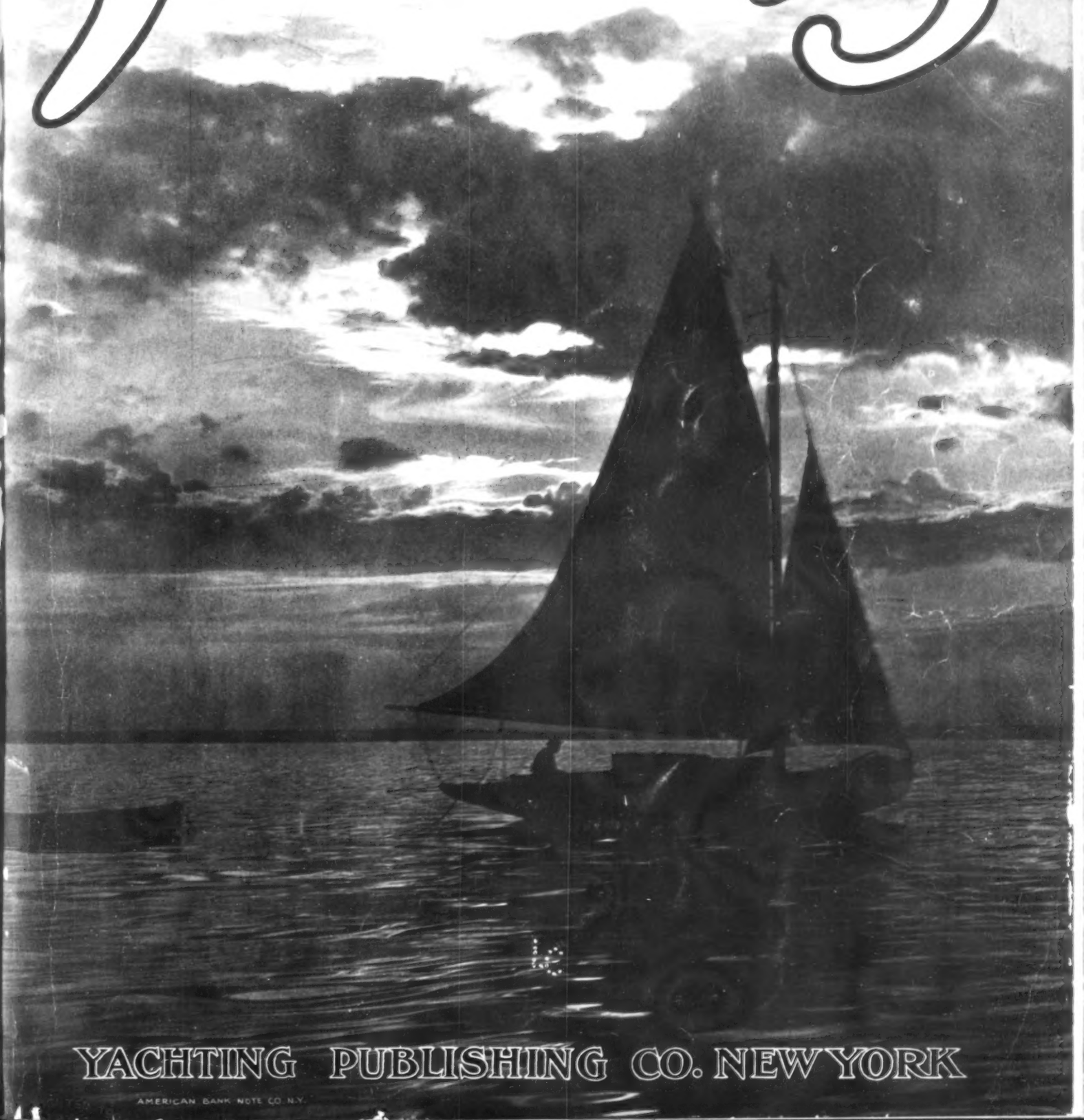

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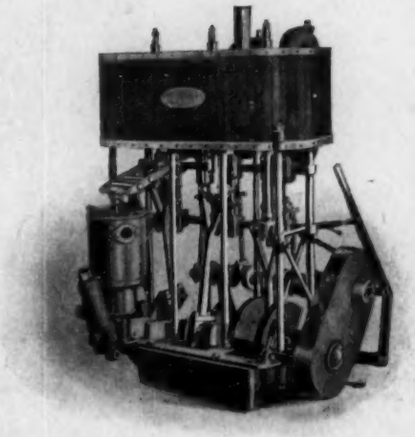

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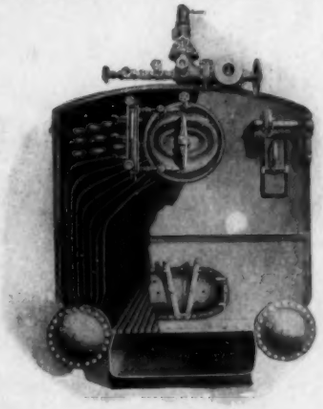

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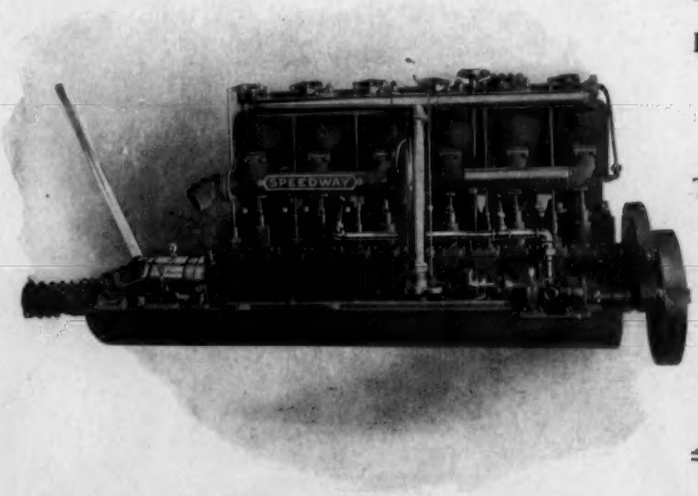

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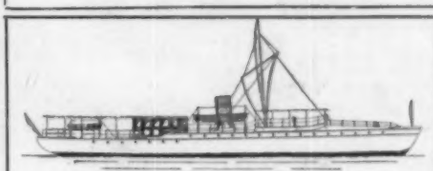

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A REMARKABLE EXPLOIT

Mr. Robert Dunn was in the Bering Sea soon after a brand new island, now famous, had been thrust above the surface of the ocean. This intrepid explorer set foot on this strange youngster among the lands of the earth; he climbed over and around it, "smoking hot" as it was. The photographs are of profound interest; the article he has written for the January number affords a glimpse into a distant geological period; it all pictures a real "world's work." The story is entitled, ON THE CHASE FOR VOLCANOES.

OTHER NOTABLE TOPICS

At the Edge of Canada in the Far Northwest, by Clifton Johnson

A picture of present day pioneers at work building a nation. The article deals intimately with the life of the men and women who are facing the problems of existence on the frontier, with their pleasures, their "society," their plans and their outlook.

Old Salem Ships and Sailors: I. The Vikings of American Commerce, by Ralph D. Paine

In the old log books left by the hardy New England sea captains, is a record of the brave days when the American merchant marine led the world. From these store-houses of romantic fact the author has derived a new and true story of a great era.

Luvinsky and the Strad, by Emerson Hough

Or, as the author humorously dubs the story, "A tale of art by the wayside." A self-styled musical connoisseur who is rather "nigh" in his dealings with the untutored children of the back-woods here meets his match and is very neatly "done."

Moorea, by Hugo Parton

Such is the euphonious name of "the happiest spot on earth," the new and real Utopia; it is fetchingly described in this article.

The noteworthy colored illustrations by Charles Sarka fairly breathe with the indolent tropical Moorean life they picture.

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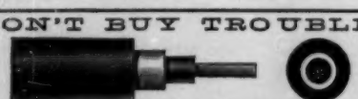

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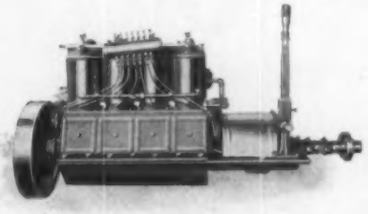

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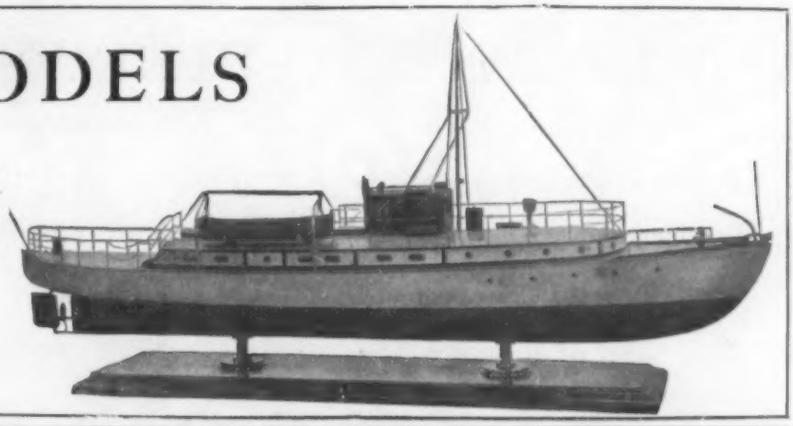

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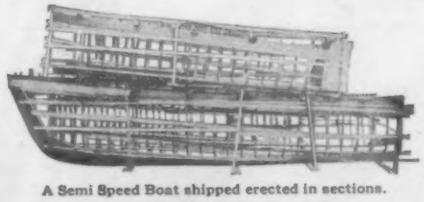

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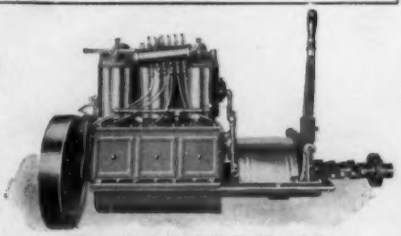

Three Cylinder 18 H. P. "Lamb."

Vol. III.

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Steam Yacht Free Lance

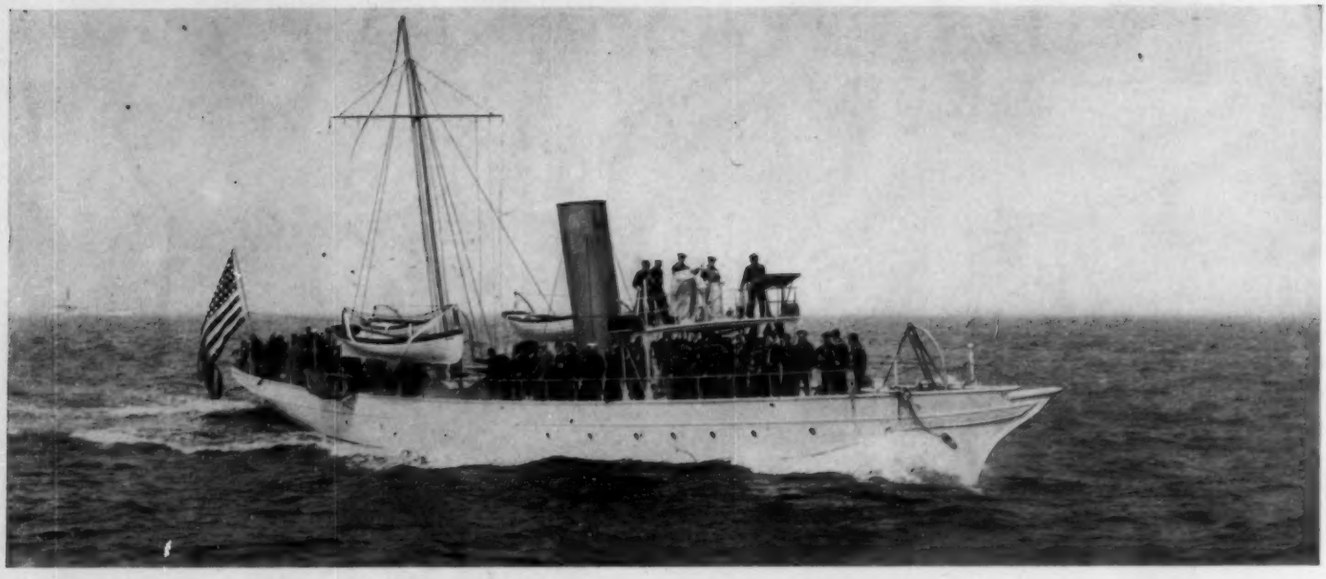
Photographs by courtesy of J. Beaver Webb and Manning's Yacht Agency

UP TO the time of the Spanish-American "misunderstanding," yachts never amounted to much as war vessels. The slender craft that depended on the caprice of wind could neither manœuvre a fight nor run away. The power boat of to-day can do both. As late as the War of the Rebellion there were almost no steam yachts in existence—the mosquito fleet was an undreamed-of proposition. Commodore Vanderbilt presented his namesake, Vanderbilt, to the government for use during that war. She was a wooden boat that had been used in the merchant service between New York and Panama, and was first class, for her day. The Commodore had made several pleasure cruises in her—so by straining a point we may bring her within the scope of this article. Vanderbilt was a side-wheeler. She had two walking beams, and was altogether modern at that time and did good service as a gunboat. At the close of the war, however, the government sold her into servitude. Promoted from first class merchant ship to pleasure yacht, then to man-of-war, Vanderbilt had got some very aristocratic notions, so the Department's niggardly conduct was a sad blow to her pride. Disgusted—heartbroken—at the ingratitude of man in general and governments in particular, she never again essayed respectability, but, instead, sank lower and lower in the social scale, and when last seen was a coal hulk off Gibraltar.

HORNET, MR. H. M. FLAGLER'S CONVERTED YACHT, ALICIA. SHE RECEIVED A BATTERY OF THREE RAPID FIRE GUNS. HER VITALS WERE COVERED WITH STEEL PLATING, HER MAIN MAST AND BOWSPRIT REMOVED AND HER FOREMAST REPLACED BY A LIGHT SIGNAL SPAR.

The war record of the great America added little to her fame. As a matter of fact, she entered the government service less through patriotism than compulsion. After winning the Queen's trophy and blazoning the Yankee genius of Steers and the Yankee enterprise of Stevens on the four great winds, she fell into evil ways. It is said that she was at one time a slave trader, in the hands of Englishmen, but this has not been established. However, the business that she got into was disloyal—blockade running during the Rebellion. For a time she eluded the gunboats, but her day was to come—fate overtook her off the St. John's River, Fla. One fine morning, as she lay in the doldrums with idle flapping sails, a spiral of smoke appeared on the northern horizon. Presently this spiral was followed by a smoke stack, and later by the black hull of a gunboat. Then a breeze came up. All sail was clapped on and America, turned tail to, gave the warsman a chase for it. However, the distance between them grew smaller and a shot was presently sent across America's bows. The Englishman was about to pull down the flag when the breeze suddenly freshened and the hope of escape revived within him. Extra sails were spread and America strained as she never had strained before. But the doughty bull dog of a gunboat kept at her heels, gaining foot by foot and hurling hot lead at the fleeing foe. In despair, the Englishman ran into the St. John's River and scuttled his vessel and escaped with his crew in the boats. Later, the government raised America, plugged the holes that the blockade-running captain had put in her bilge, and made a despatch boat of her.

The subsequent career of America was uneventful. The government fitted her up to participate in the International Race against Cambria, the English boat. Notwithstanding her demoralizing experience, she came in fourth in the event and one ahead of the foreigner.

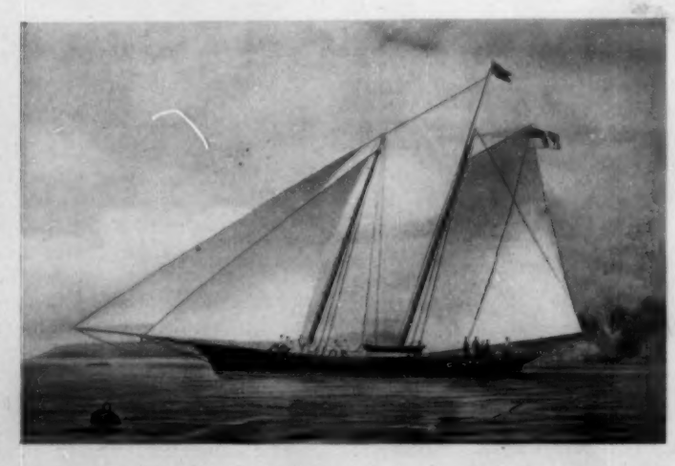


AILEEN, PURCHASED BY THE GOVERNMENT FROM MR. RICHARD STEVENS. TOGETHER WITH FREE LANCE SHE DID DUTY GUARDING THE SUBMARINE MINES IN THE LOWER BAY, NEW YORK HARBOR, DURING THE WAR WITH SPAIN.

War Governor Sprague of Rhode Island turned his fine schooner yacht, Hope, over to the government in 1861, and she did excellent scout service up and down the coast, using her "get away" qualities to good effect in reporting the movements of the rebel war vessels. Later, she was made into a Sandy Hook pilot boat, where her speed stood her in good stead in the spirited contests that marked that business before the smoke stack put the spar's nose out of joint.

Early in the Rebellion, Mr. James Gordon Bennett loaned Henrietta to the government. She was fitted up with brass cannon in regular man-o'-war style. Mr. Bennett, commissioned lieutenant by the government, commanded the vessel practically during the whole war. It is said she might have proved formidable in an engagement—but this she never enjoyed. However, she did valuable service as a scout between the Carolina coasts and the Hook. During this experience Mr. Bennett became so imbued with navy discipline that he has since enforced it on the various successors to Henrietta. Everything on his yacht moves to bugle and whistle; there are boat drills every day when practicable—and all the rest of it. The boats themselves seemed to absorb the martial spirit of their owner. Namouna, successor once or twice removed, to Henrietta, probably got her war spirit from Mr. Bennett. She first smelled powder at the bombardment of Alexandria, where she was present as a guest. When he was finished with Namouna, Mr. Bennett sold her to the Columbian government and they fitted her up with Hotchkiss quick-fire guns and plenty of brass work and made a typical South American man-o'-war out of her. Furthermore, they named her General Pinchon, after that sprightly Columbian soldier and statesman.

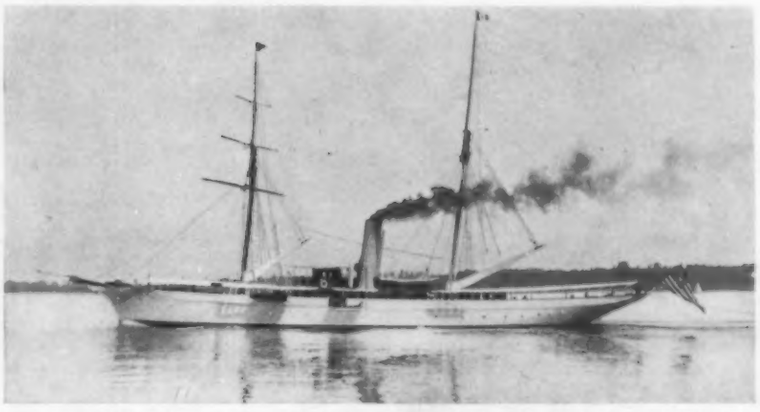
The beginning of the war career of Atalanta reads like a Dumas romance. When Mr. Gould was through with her she was acquired by the Venezuelan government. Someone said that it was not that they needed any vessel for real warfare, but that they must have a justification of the inordinate number of admirals and generals there were down there—so they built a stockade and bought a yacht. A doughty West Streeter was engaged to take the boat to her tropical destination and turn her over to the authorities of war. At the very start this captain got some points on Venezuelan politico-grafting methods. The agent here assured him that a proper supply of coal—some 175 tons—had been put aboard and that all was ready for the start. Nothing doubting, the skipper put to sea. Almost immediately they encountered heavy weather—this was in mid-January. Heavy seas crowded and rolled and jostled Atalanta and swathed her with salty foam that turned to icy festoons as it struck. But she weathered it all with the very abandon of graceful vigor. Ever rising, falling, rolling and rollicking, in the swirl of the storm, with big power in her screw and a sixty-mile wind astern, she ploughed on, with her nose pointing to the Southern Cross. All went well until the fourth day out, when, lo, the engineer told the captain that his coal was all gone. Then it was discovered that no more than seventy tons had been put aboard. The discrepancy between that amount and one hundred and seventy-five could be accounted for in only one way—graft.



AMERICA, THE YACHT THAT NAILED THE NATION'S CHAMPIONSHIP PENNANT TO THE MASTHEAD. SHE WAS PUT INTO THE TREASONABLE BUSINESS OF BLOCKADE RUNNING DURING THE CIVIL WAR AND WAS SCUTTLED BY HER CAPTAIN IN THE ST. JOHN'S RIVER, FLORIDA. THE GOVERNMENT RAISED HER AND PRESSED HER INTO SERVICE AS A DESPATCH BOAT.

Nothing would do but to run for San Juan, Porto Rico. So they burned their dunnage and extra spars and were finally reduced to salt pork as fuel—literally floating in on fat. However, they made port, where they coaled and eventually sailed for La Guayra. Here they were welcomed by the distinguished Castro. The West Street captain's stay aboard the vessel might have been longer, had he not been so strenuous a celebrator of Washington's

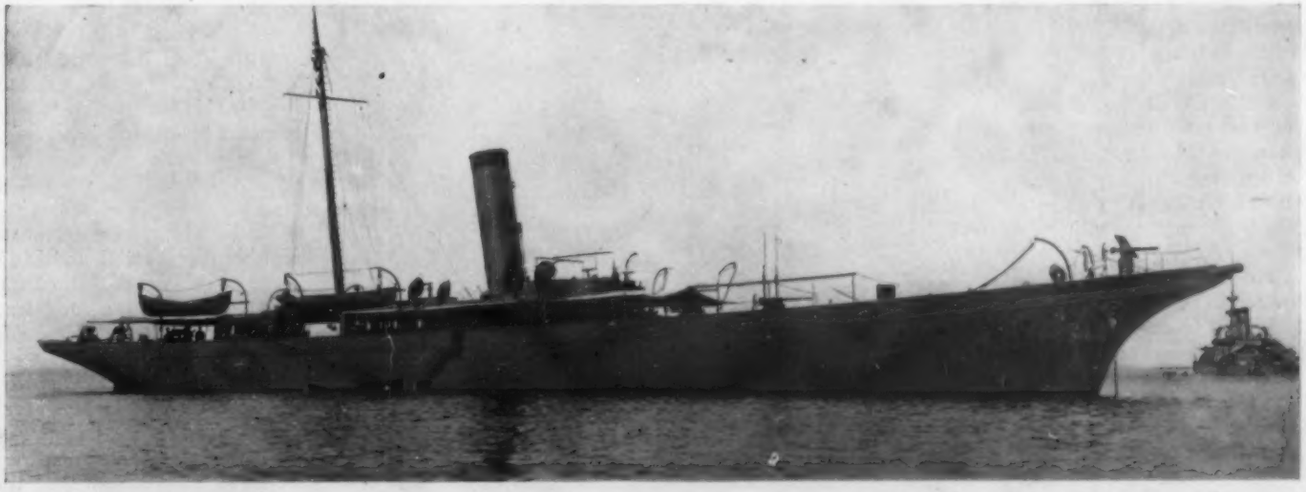
Birthday. Although his vessel had been turned over to the authorities and had, in view of anticipated achievements, been christened Restaurador, and was in all respects a Venezuelan man-of-war, Merithew—that was his name—was not himself converted. When the gunboats, Scorpion, Lancaster and Dixie, entered the harbor, all decked out in honor of the "great Virginian's" birthday, the West Streeter forgot that he was aboard a foreign warship—in his enthusiasm he forgot everything—he even forgot that the Venezuelan commander was present. He made a mighty resolution—he would give the Yankee salute to the American flag. The crews had been ordered from the gun deck—but, with a roar, Merithew ordered them back. They went. Then when Scorpion let go twenty-one guns, Atalanta responded with a like number—likewise she ran Old Glory up to the masthead. The sight was paralyzing to the government people ashore. Jabbering like infuriated parrots they swarmed aboard—generals, admirals, and all the rest of them—demanding an explanation of the outrage. But Merithew gave none. He had saluted Old Glory—and that was all he cared about it. However, he was summarily paid off and dismissed, together with his Yankee crew—for which he was devoutly grateful.



YANKTON, FORMERLY MR. H. C. CONVERSE'S STEEL BRIGANTINE RIGGED YACHT PENELOPE. SHE WAS BUILT IN SCOTLAND, WAS ONE HUNDRED AND EIGHTY-FIVE FEET ON THE WATER LINE AND HAD A TONNAGE OF FIVE HUNDRED AND FORTY-ONE. SHE WAS ONE OF THE BOATS THAT FACED THE SHOT AND SHELL OF THE ENEMY.

Within thirty-seven years a sweeping revolution in naval warfare was effected. During the Spanish War hundreds of minute craft swarmed the seas, available for no end of purposes. But our business is with the more conspicuous pleasure craft. No sooner did President McKinley issue a call to arms against the Spaniard than many great yacht owners proffered their boats; but not many in the spirit that marked the offer of the patriotic F. Augustus Schemmerhorn. Of the gift of Free Lance, the Tribune said: "This is the first outright gift of a ship to the navy, and it is in rather marked contrast with the terms of acquisition of other steam yachts, tugs, etc." Free Lance was an A. Cary Smith design, which speaks much for her doughtiness and speed. It was not her destiny to enjoy an engagement, but she did good work on patrol, and this and her owner's patriotic spirit entitle her to distinction. Apart from her, the government took over Mayflower, Josephine, Penelope, Sovereign, Corsair, Columbia, Comanche, Hermione, Eugenia, Sylvia, Stranger, Illawarra, Thespia, Kanawha, Dorothea, Aileen, Viking, Buccaneer, Almy, Alicia, Elfrida, Enquirer, Inca, Sheer Water, Restless, Huntress and No. 295—all first class steam yachts. Their combined lengths was almost a mile and their tonnage some 8,800. These craft did valuable work on blockade. It remained for a few, however, to win their spurs in actual powder-burning conflicts. Among these, Gloucester's work was the most conspicuous. Gloucester, as everybody knows, was Mr. John Pierrepont Morgan's Corsair turned into a gunboat. One bright morning they took Corsair from her moorings and turned her over to the navy people. These—to her thinking—vandals stripped her of her finery and on her decks they put the grim paraphernalia of war. They made her the color of the sea at night. Corsair, not grasping the meaning of the drastic changes in her make-up, very naturally resented them. But something told her that the battery of ten guns in place of the tiny piece with which she used to say "Goodnight" to the sun meant that her new business was a serious one. For a time she missed her accustomed grooming, but presently fell into the greasy ways of war. She was put in charge of Lieutenant-Commander Richard Wainwright, U. S. N., now captain of the battleship Louisiana. Wainwright got everything out of Gloucester there was in her. During her one hundred days' absence from New York she was in action at Aquadores, Santiago,

(Continued on page 54)



GLOUCESTER, FORMERLY MR. J. PIERREPONT MORGAN'S, DESIGNED BY MR. J. BEAVER WEBB. THEY MADE A GUNBOAT OF HER AND SHE SHOWED HER METTLE IN FOUR STIFF ENGAGEMENTS; AQUADORES, SANTIAGO, GUANICA, AND ARROYO. AT SANTIAGO, GLOUCESTER, SINGLE HANDED, ENGAGED THE DESTROYERS PLUTON AND FUROR, AND AFTER A FIERCE BATTLE PUT THEM OUT OF COMMISSION.

A TYPICAL START OF YACHTS OFF EDGEWOOD YACHT CLUB IN NARRAGANSETT BAY.

The 22-Foot Restricted Class Transplanted

RHODE ISLAND YACHTSMEN IMPORTED FOUR 22-FOOTERS FROM MASSACHUSETTS BAY WHERE THEY HAD BEEN CAST ASIDE IN FAVOR OF THE NEW CLASS Q YACHTS—EXCELLENT RACING WAS SEEN IN THIS CLASS IN BEAUTIFUL NARRAGANSETT BAY—LITTLE HASTE AND OTHER BOATS

By T. R. GOODWIN

THE 22-foot restricted class of Massachusetts Bay, thrown into the discard in favor of the new Class Q, furnished the best kind of racing on Narragansett Bay last season. With the possible exception of being a trifle too long and flat in the ends, a fault which, in view of the fact that it makes more room inside, is easily condoned, this class of boats represent the best combination of speed, weatherly qualities and cabin accommodation for their size that has ever been turned out.

Narragansett Bay imported four of these craft, Peri II, a Boardman production, Medric II, from the boards of Small Bros., and Setsu and Sigma III, both Burgess and Packard designs, the former a sister boat to the 1903 champion, Opitsah V.

To make the proposition more interesting they were classed with Little Haste, the great centreboarder whose performance in the old 21-foot class had signed the death warrant of that deservedly popular division of boats in 1902.

Opitsah III, who ran a close second in the 21-foot class the year previous to Little Haste's debut, also joined the class, and the bringing together of these three dissimilar types was looked forward to with great interest.

To this fleet was added Novice, a Hand design, built in 1905, and owned by A. L. Sands of Newport; Priscilla, a Fall River production; Wanderer IV, the greatest of all catboats, now rigged as a sloop; Little Rhody, the New Rochelle to Marblehead cup winner; Cara and Sagamore.

Novice is a beautifully turned fin keel of twenty-five-foot water line, with long, lean ends, high freeboard and a small sail plan. While really outclassing the other boats in size, by virtue of her small rig she squeezed into the class as scratch boat.

Little Haste had lain in a shed at Marblehead since her return from Chicago after her defeat of La Rita in the East vs. West series, and never having run up against the "22's" was an entirely unknown proposition.

The season opened with a sweepstakes event between Little Haste, Peri II, Setsu, and A. C. Jones's celebrated Nutmeg, from Marblehead to the Rhode Island Yacht Club House at Pawtuxet, and was won by Peri II from Nutmeg by a margin of less than five minutes, with Setsu and Little Haste but 43 minutes back of the winner.

LITTLE HASTE, F. B. THURBER, OWNER. SHE LOGGED 12 KNOTS AN HOUR BETWEEN POINT JUDITH AND MONTAUK POINT IN THE BRISTOL-MONTAUK RACE.

The first Championship event came on Memorial Day, Little Haste defeating the keel boats with ease. Although losing to Peri II the week following through a split mainsail, she pulled out the next two events in hollow fashion, Peri II taking second in one and Medric in the other.

At Edgewood Yacht Club on Ladies' Day, an unfortunate foul between Peri II and Little Haste so delayed the latter, that Setsu pulled out a long lead which the centreboarder could not overcome.

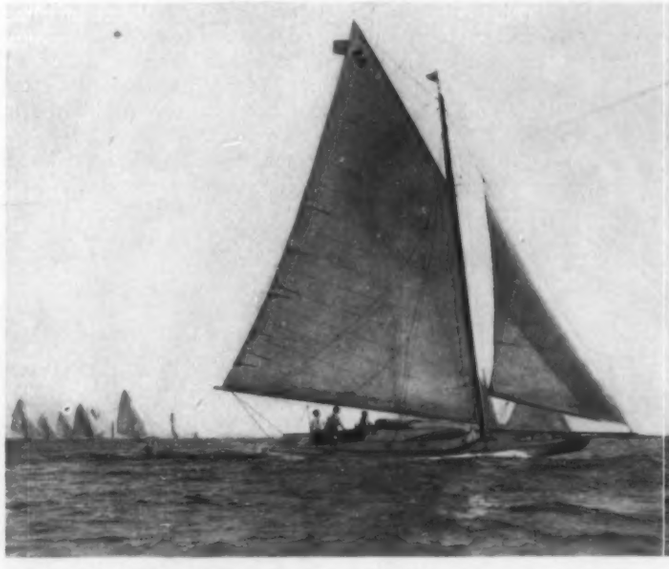
The next event was the widely advertised Bristol-Montauk Race. This rather unfortunate affair was so entirely ruined by the absence of the stake boat at the outer mark that it was robbed of any value

as a contest of record or accurate comparison in future events. Running before a thirty-mile blow, Little Haste passed the entire fleet, making Montauk Light at 8.45 under whole sail, ballooner, and her small spinnaker, after a marvelous exhibition of her running abilities. She actually logged twelve miles an hour between Point Judith and Montauk and beat her nearest competitor, Nutmeg, by nearly an hour. In reefing, she broke her gaff and was obliged to run to New London for repairs. None of the other contestants except Little Rhody could locate the buoy in the heavy sea and thick conditions that prevailed, and after searching for periods of time varying from one to two hours laid their course for home. Peri II figuring herself out of the contest from this reason, although two hours ahead of Little Rhody, put into Point Judith breakwater and all hands turned in until the following morning. Bambino jogged home under the shortest possible canvas for the same reason, as did Nutmeg, her owner having received a nasty cut in the face from a fall down the hatchway. Sigma III brought up in Stonington with her mainsail split, while Setsu, nearly four miles off her course, brought up on a bar at the entrance to Gardiner's Bay, from

Little Haste won from Novice, with Wanderer IV third; but on Monday at Washington Park the boats changed places, while at Edgewood Novice scored again with Peri II between her and Little Haste.

Novice, with two victories and a second, against Little Haste's single winning, one second, and a third, looked like a favorite for the plaque; but at Potter's Cove Wednesday, while Setsu won with Opitsah III in second place, Little Haste got third, decisively beating her rival, who had to be satisfied with fifth place. The following day at Fall River was the prettiest race of the week. Little Haste walked out to windward of her rival and held the lead all over the course, a freshening breeze on the last leg bringing the entire fleet up to within a hundred yards distance. Medric II succeeded in beating Peri II, while Novice could do no better than fifth again.

On Friday, at Newport, Little Haste met with a series of accidents culminating in the loss of her centerboard and did not start, Novice winning in a hard breeze from Priscilla and Peri II, but the centerboarder had a safe margin of six per cent. on the trophy, so that her absence from this race did not affect her



SETSU, A REMARKABLE LIGHT AIR BOAT. SHE IS A SISTER BOAT TO OPITSAH V AND MEDRIC I.

PERI II, A BOARDMAN BOAT ORIGINALLY DESIGNED FOR THE MASSACHUSETTS BAY RESTRICTED CLASS, 22 FOOT.

which precarious position she was kedged off next morning with the assistance of the crew of a passing yacht.

On the Fourth of July Novice made her initial appearance. In light, fluky conditions she won from Little Haste by thirty-three seconds, which dose she repeated at Edgewood in the first of the Possner Cup series the following Saturday, by the narrow margin of eleven seconds. Had Thurber called for a measurement on the Newport boat he would have won both these races, as was shown a few days later when a remeasurement nearly three-quarters of a foot longer was given Novice.

The week of racing held by the Narragansett Bay Yacht Racing Association commenced at Bristol on Saturday, July 20th. Outside of the regular cups at each regatta and the Championship percentage, the Association had offered a handsome plaque to the boat making the highest percentage during the week. There were nine starters in Class P, and as the percentages obtained would go a long way toward settling the Championship fight, the interest was keen. While Little Haste was well ahead, Novice's showing had caused the supporters of Thurber's boat considerable uneasiness.

final standing either in the one way or the other in summing up. A week later was scheduled the first race for the Fletcher trophy, open to sloops of all classes, from Bristol to Brenton's Reef Lightship and return.

Fourteen boats ranging in size from the Buzzard's Bay "thirty" Duchess, to the fifteen-footer Kildee, owned and sailed by Francis Herreshoff, son of the "Wizard of Bristol," were entered. A very light, fluky wind, followed by a period of dead calm and then by a fresh southwesterly air, gave Novice a long lead on the fleet, and while they ran her considerably on the way home and Peri II got her on time, she finished ahead. Setsu took third and Opitsah III fourth.

The final race of this series was on September 7th and the conditions were an almost exact duplicate of the first race. Novice captured this race and the cup, with Peri II second, Setsu third, Little Haste fourth, and Opitsah III fifth. Opitsah III moved into fourth place on percentage and took the cup for that position.

The second leg of the Possner Cup and championship race was a victory for Little Haste, with Medric in second position,

Peri II being third, followed by Novice, which came in fourth. This race clinched the season's prize for the centreboarder, as while there were three other events, in which she got a second, fifth and sixth, her lead was too great to overcome, and the season wound up as follows:

CLASS P. PERCENTAGE TABLE. SEASON 1907.

Boat.	Owner.	Points.	Starts.	Per cent.
Little Haste,	F. B. Thurber	1322.9	17	77.8
Novice,	A. L. Sands	1018.0	14	72.7
Peri II,	W. J. Rooks	916.4	17	53.9
Medric II,	W. L. Frost	764.3	15	50.9
Setsu,	A. L. Buffinton	652.3	14	46.6
Priscilla	Wood Bros	647.0	14	46.2
Opitsah III,	Harold Church	419.3	14	29.2
Sigma III,	B. W. Comstock	196.4	14	14.0

Little Haste was designed by Burgess & Packard. She is a remarkable achievement as a specimen of the builder's as well as the designers' art.

Her over all length is 39 feet 10 inches; water line, 20 feet; beam, 10 feet 6 inches; draught without board, 3 feet 6 inches. She has a handsome sheer plan, with a long, flat floor, extremely hard bilges and a pronounced tumble home to her midship section. She is planked with yellow pine, while her timbers are double hackmatack. Her keelson is of two-inch oak and runs her whole length, giving her strength to resist the hammering of a hard chop. She carries 950 square feet of sail.

With her sheet started she is a wonderful boat, and she will work out to windward when in proper trim in a manner to open the eyes of the exponents of the V hull. She is hung up so fine that she carries practically no helm under any conditions, and from this reason is extremely sensitive to any slight changes of sail or trim.

Novice was designed by Hand of New Bedford. Originally a compromise boat, she was altered over into a fin keel, and from a failure, turned out to be a remarkably fast boat under any conditions.

Peri II, designed by E. A. Boardman for the Massachusetts 22-foot restricted class, was an extremely consistent performer. She was at her best in a hard breeze, and yet, on the other hand, she had drifting abilities beyond any other boat in the class. She was very efficiently handled by her owner, Mr. Will Rooks, and could be always counted on to finish with the leaders.

Medric II, a Small Bros. 22-footer, came to these waters with the best reputation of the lot. Handicapped in the earlier races by a very poor suit of sails, she showed neither speed nor power; but with new canvas she reversed her early form and immediately became a factor in the game.

Setsu, a sister boat to Opitsah V and Medric I, was at her best in light airs. She was the most erratic performer of the fleet, but, given her conditions, she would streak her way through in a most surprising manner.

Priscilla, an out-and-out fin-keeler, designed and sailed by her owner, was palpably under-canvassed and out-classed. On one occasion, in half a gale of wind, she carried her sail when all the other boats were smothered, and took second to Novice. She received time from every boat in the class, and even at that was unable to hold the other boats at all in average conditions.

Opitsah III is a Crowninshield production of moderate overhangs, light displacement and small sail plan. After taking second to Tabasco in the old 21-foot class in 1901 she had been out of the racing game until her importation to these waters gave her a chance at the prizes by virtue of her large allowance. In light airs she was a proposition to be reckoned with, but in a breeze she found it hard to hold her own, even with the aid of her time.

Sigma III, formerly the 22-footer Tayac, is still an unknown factor. Poorly canvassed and poorly manned, she was withdrawn early in the season, before she had really had a chance to show her ability.

The fine racing between these boats has given this class a wonderful impetus, and there are already rumors of a number of new boats for next season.

It speaks well for the efficiency of the boats that they were driven through a hard season of racing, both inside and outside, and came out of it as sound as on the day they were built.

The Hunting Launch

By E. T. KEYSER

Photographs by Edwin Levick

THE most recent type of hunting cabin cruising power boat —that in which the sides are carried up to form the cabin trunk, undoubtedly possesses many advantages. At the same time, like everything else in this world, there are points about it which may be regarded as drawbacks. In the sudden popularity of the craft some of the points which make against its universal adoption seem to have been ignored. Of course, it largely depends on the use to which a craft is to be put, as to whether the new or the older form of trunk cabin is really the more advantageous. The new design of trunk, carried out to the bow, gives added freeboard, tending to make the boat drier in rough and choppy seas. It also gives full head room to the extreme width and length of her cabin. On the other hand the forward deck of this type of small launch is an extremely awkward place from which to handle anchor or mooring in rough weather and does not afford the lounging place which the old cabin trunk always offered.

THE NEW STYLE OF CABIN TRUNK CRUISER. HERE THE FORM OF CONSTRUCTION IS STRONGER AND GIVES MORE FREEBOARD WHERE IT IS MOST NEEDED, BUT THE ADVANTAGES ARE AT THE EXPENSE OF DECK ROOM.

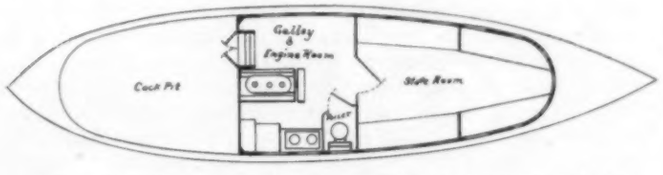
On the old boat, with deck room on each side and also at the bow, the trunk was an ideal place on which to sit or lie when under way in smooth water, or when at anchor. In fact, covered with an awning and fitted with cushions, it was probably the pleasantest part of the boat, while for an afternoon's outing it considerably more than quadrupled her passenger-carrying capacity. While it did not allow the amount of head room below, that the new style does, yet it is to be doubted if this additional head room is of very much value

on small cruisers, situated as it is, directly over the bunks or transoms, where head room is not particularly needed. Of course, the claim may be made that it is still possible to sit on the cabin roof of the new type trunk; but any one who has tried it will admit that there is a vast difference both in comfort and in safety.

This is in nowise to be construed as decrying the advantages of the increased strength and higher freeboard of the raised deck type in larger craft. But just because it is a good feature on a large cruiser, a number of owners seem to have jumped to the conclusion that it would be just as good a thing also on the very small size of cruising launch. On a big boat, where there is plenty of cockpit room, or where a guard rail on the raised deck will not look out of place, the new style of cabin trunk is comfortable, appropriate and convenient, but on a little bit of a launch, where every bit of deck space should be available for passenger accommodation, it is quite another proposition.

There is another point on which many launch owners seem to be woefully indifferent. This is the amount of stowage room, in the form of cupboards and lockers, with which their craft is supplied. I have seen magnificently appointed cruisers, with lots of cabin, plenty of sleeping room and any amount of space in the cockpit, but with no adequate cupboards and lockers for clothes and food supplies.

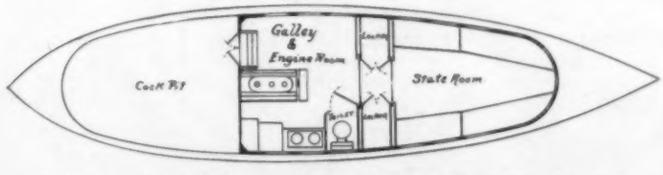
In the first place, a fairly large closet in the galley is almost as important as the galley itself in a cruising craft. You *can* carry flour, potatoes, canned goods, ham and bacon in various nooks and corners, but it won't be shipshape, and it will be an annoyance to round them up each time that a meal is to be prepared. A tall locker in the engine room, or just off of it, in



ACCOMMODATION PLAN OF A CRUISER IN WHICH EXCESSIVE SPACE IS GAINED AT THE EXPENSE OF STOWAGE ROOM.

which oilskins may be hung and boots stowed before going forward, after a trick at the wheel in wet weather, makes all the difference between a nice, dry, cheerful cabin and a sort of Dismal Swamp.

It is not necessary to have an elaborately beautiful refrigerator, but you do want one that will hold a good full-grown piece of ice



HOW THE SAME SIZE AND MODEL OF CRUISER WAS PROVIDED WITH TWO LARGE CLOSET LOCKERS AND THE ODORS OF THE ENGINE ROOM AND GALLEY ISOLATED BY TWO SLIDING DOORS.

that will keep, instead of being chopped up in small bits that melt like New Year's resolutions.

Here is an illustration of a cruising launch, which was turned out for a man who spared nothing when it came to interior and exterior finish, and who inserted open, light and well-aired sleeping accommodations, but that he totally neglected any space in which to hang his clothes or stow his supplies, is quite apparent to a most casual inspection. The second illustration shows just how, with very little loss of sleeping accommodation, the same boat could have had better locker space than the inhabitants of an average metropolitan apartment house can boast.

In the old days, before the general adoption of the self-bailing cockpit, the cockpit side seats afforded ample locker space. In fact, some of the small cruisers had their refrigerator located in one of these lockers, where it could be easily filled with ice without

THE OLDER FORM OF CABIN TRUNK. THE BEST FORM FOR A SMALL CRAFT. THE ILLUSTRATION SHOWS HOW THIS TYPE IS PRACTICALLY ALL PASSENGER ACCOMMODATION.

carrying it into the cabin. These transom lockers occupied room that could not be utilized otherwise, but when the self-bailing cockpit came in, the increased width of the craft at the greater height of floor, induced the builders to do away with seats and leave an almost clear floor to accommodate chairs. The space is still there, but is under the flooring, which means tight hatches or leakage. It is no longer handy and is to-day mostly used for tanks, which are not expected to be gotten at very often during the season.

The gradual movement of the motor toward the bow is an interesting feature of cruiser development. In the old days, the engine of the hunting cabin launch was located in the cockpit, about as far aft as the rake of the shaft would allow. Then came the idea of housing it in the center of the cockpit, protected by a box which could be taken apart, to allow access to it at any time. This box, fitted with drop leaves at the sides, made an excellent dining table. With the general adoption of the self-bailing cockpit, the engine picked up its bed and went still further, letting its nose, in the form of a fly wheel, protrude into the cabin, just under the companion stairs. To-day, it usually shows its entire mechanism, frankly exposed, in the galley itself, which galley thereby becomes the engine room, and the refrigerator, once supreme monarch of the apartment, is shoved up in a corner and reduced in size as much as possible.

Not satisfied with this berth amidships, the motor is now moving forward and taking up a position in the bow of the boat.

This gives a fairly level shaft, leaves the after part of the boat clear and would, in fact, be an ideal arrangement if it were not for the fact that a long shaft calls for more bearings, and more bearings create more friction, and, furthermore, the longer the shaft, the more liable it is to accident by reason of the increased strain upon it.

With the engine under the cockpit floor, with only a fly wheel projecting into the galley, it was possible to have a lot of room in this compartment, by the expedient of a central hatchway, and steps, which folded back, to give access to the motor. There were two drawbacks to this arrangement, and one was that the engine was not very handily placed for examination and repair, the other that, after some tinkering with his motor, the engineer might possibly forget to drop those steps, and the pilot hurrying down on a dark night might strike the floor a little too suddenly and too hard for comfort or find himself barred out, according to the length of the steps or the strength of their fastening.

ANCHORAGE OF THE SAN FRANCISCO YACHT CLUB AT SAUSALITO.

CLUB HOUSE OF THE SAN FRANCISCO YACHT CLUB.

The Season of 1907 on the Pacific Coast

TWENTY-FIVE FULL WEEKS OF GOOD SAILING ENJOYED BY THE YACHTSMEN OF THE "WEST COAST" IS A RECORD THAT SHOULD IMPRESS MIDDLE ATLANTIC SAILORS WHO ARE HAPPY IF THEY ARE PERMITTED TO CARRY THROUGH, WITHOUT ELEMENTAL DRAWBACKS (PASSIVE OR OTHERWISE) AN ITINERARY OF SAILING WHICH INCLUDES THE COMPARATIVELY FEW WEEKS BETWEEN JUNE 1 AND SEPTEMBER 15—PLANS FOR 1908 ARE COMPREHENSIVE—NEW YACHTS AND OCEAN RACES

By CHARLES ROYCE BARNEY

YACHT clubs around San Francisco Bay had a glorious season of twenty-five full weeks of sailing. To the Pacific Coast man, who takes the broadest view of this finest of aquatic sports, there was certain and unmistakable evidence of advancement along lines which tend to enlist the sympathy of amateur sailors in what is best for their game. The development, too, has been so general that no fear is entertained of a too zealous interest in one branch of the sport at the expense of another.

To begin with, the power boat fleet has been added to by the addition of Mr. Greenwood's La Bohême, Mr. Wagner's Roamer, Mr. Robbin's Lillian and several others whose dimensions range from twenty-five feet over all to sixty; horsepower from twelve to sixty. So far all seem to have given general satisfaction and will no doubt serve to encourage construction through the winter months by those who are determined to have something better or are not yet in the sport except in spirit.

Among the sailing contingent there has been a recommissioning of many of the old time boats and sure indications of a decided increase in the fleet of new ones.

Of the new boats already built the forty-foot sloop Yankee, belonging to Mr. Abacassis, has out-classed everything in this neighborhood. Though known in her first year to be a good boat, she needed the more arduous competitions of 1907 to fully establish her reputation. This she has done by proving her ableness in all kinds of weather and in all conditions, and by winning the Farallon Race on September 14th.

Mr. Story's Caprice, an able cruising schooner sixty-five feet over all, launched in September, 1906, at first gave her owner a great deal to think about. Her first performances were very unsatisfactory. She was slow, did not handle well, and her tackle was ill-adapted for the handling of canvas in such winds as we invariably get during the summer months. But careful attention to her peculiarities soon eliminated these faults, and what had appeared at first to be serious defects later turned out only as mistakes of adjustment, which were eliminated by a few commonsense changes. Since they were made the boat has been through the season of 1907 a fast and able cruiser, although her owner is not interested in racing.

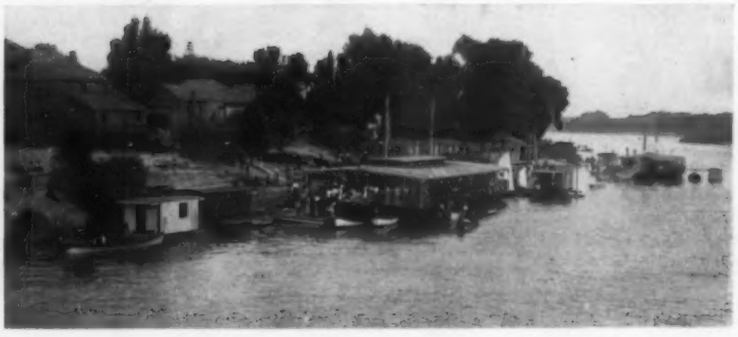
What was true of Caprice also holds good with Martha, built after Crowninshield designs by Frank Stone. From the day she slid from the ways early this year her owner, J. R. Hanify, has been constantly adjusting her trim both as to hull and spars in order to get her to do justice in performance to the beauty of her graceful lines and proportions. At first she was so tender that it required the addition of 2,800 pounds of ballast before she came anywhere near being stiff enough. Then, too, it soon became evident that her masts and spars were far too heavy and

CAPRICE, SAN FRANCISCO YACHT CLUB, MR. GEORGE E. STORY'S FAST CRUISING SCHOONER, BUILT AFTER EASTERN DESIGN.

YANKEE, CORINTHIAN YACHT CLUB. SHE WON THE 44-FOOT EVENT IN THE PACIFIC INTERCLUB REGATTA.

MARTHA, SAN FRANCISCO YACHT CLUB, MR. J. R. HANIFY'S NEW SCHOONER. WHICH WON SECOND PLACE IN THE "FARALLON RACE."

the latter were trimmed considerably. All these things helped her and she has been steadily improving, and under the able handling of Captain Swanson and her crew she was brought in a very close second to Yankee in the Farallon Race. That was in light winds and with an amount of windward work that greatly favored the sloop. She points very closely for a schooner, and off the wind runs remarkably fast. Mr. Hanify is going to trim down his masts, which are out of proportion, and it is expected this change will do much for her and that she will be found in the front rank next season.



HOUSE BOAT OF THE SACRAMENTO BOAT CLUB ON THE SACRAMENTO RIVER.

One of the invaders of the ranks of the mosquito fleet is little Moonlight, owned and built by B. Vincent, after Eastern models, with some changes of his own. These plans were thoroughly tried out in a small model yacht, constructed on the same lines, which won over all competitors. The larger boat is a fast craft, especially in light winds. The most serious criticism that can be made of her is that the lack of beam and general fullness, particularly in the stem, have deprived her of the able qualities so necessary for a boat in the heavy seas and high winds of San Francisco Bay. This defect has been to an extent corrected by reduction of sail area, and Mr. Vincent is thinking seriously of further reducing the hoist and general loftiness of sail. This boat has shown no phenomenal form, but it can not be denied that she has been steadily improving, and her defeat on the 9th of September of Neva entitles her to be regarded as a possible competitor of Discovery in a race for the Perpetual Challenge Cup recently won by the latter boat, when she defeated Valkyrie of the South Coast Yacht Club.

For the first time in the history of the race, one of the contestants for the Perpetual Challenge Cup this season hailed from a club far away from San Francisco Bay, and, although they were defeated, these sailors from the South Coast Yacht Club won many friends by their sportsmanlike conduct. They were unfortunate in their selection of a craft in challenging, for their Valkyrie was nowhere near able enough to successfully compete with Discovery of the Corinthian Yacht Club in the channel course. Her captain and crew made some mistakes, as was natural, but they learned some things valuable to themselves and their associates, and it is believed that they will not be content until they have put themselves in line for another contest. At any rate, both northern and southern contingents have become thoroughly aware of each other's existence and will lose no fair opportunity of getting together, either in this bay or on a common ground where the conditions of contest make such a thing practicable.

This, together with the Farallon Race, a contest open to boats seaworthy enough to cover the course, will do much to give racing more than a local importance, especially as next year there is to be a San Francisco to Santa Cruz Race, with a regatta at the latter port.

The San Francisco and Corinthian Clubs have increased their membership lists and their fleets during the past six months and the Aeolians have a dozen or so new boats in their fleet.

One-Design Racing Class

A GROUP OF BOATS BUILT FROM ONE SET OF DESIGNS AFFORD A GREAT DEAL OF GENUINE SPORT FOR THEIR OWNERS—IN SAILING, AS IN MOST THINGS OF THIS WORLD, ALL BEING EQUAL, SUCCESS DEPENDS UPON THE PERSONAL EQUATION—FOR IN THE CRAFT BUILT FROM ONE-DESIGN EVERY OWNER HAS AN EQUAL CHANCE SO FAR AS YACHT IS CONCERNED—HOW CLASSES MAY BE FORMED—THE GOOD EFFECTS WHICH THEY HAVE HAD UPON THE SPORT

By CHARLES P. TOWER

Photographs by F. A. Walter and others

"TELL us something about a one-design racing class." "How do you go to work to organize such a class?" "What sort of yacht is best for the purpose?" "How many boats make a class?" "How much does a one-design boat cost?" "Of what benefit is such a class to a yacht club?" "And what is a one-design class anyway?"

These are some of the questions which have been asked of YACHTING during the past two or three months. It is something of a contract to answer them properly, when it is considered that on Long Island Sound alone, during the past few years, there have been one-design classes numbering as few as two boats, and others of as many as eighteen. There have been classes, the cost of which has varied from something less than $50 per boat to something more than $20,000; classes that have been formed simply through the co-operation of two enthusiasts, and classes that have been organized with as much elaborate preparation as attends the birth of a new political party. Let's look into the matter, however, and, in the first place, have an understanding on two or three matters, some of which have a bearing on the one-design idea. If yacht racing were a mathematical science, we might call them axioms.

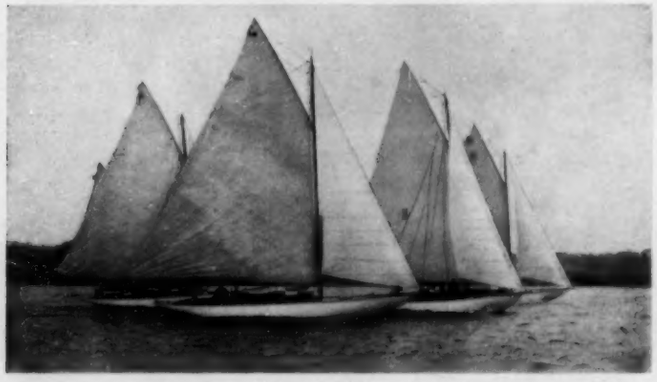
First, any boat is a good boat; doubtless some boats are better than others, but the question of superiority is one to be decided largely by personal preference.

Second, anything that assists in creating an interest in racing among men who have no knowledge of the sport is a good thing, for it "pushes the game along."

Third, anything which centralizes interest in a club itself and increases the number of active members, is a good thing, for it likewise promotes the welfare of yachting.

Fourth, during a number of years previous to the adoption by the Atlantic Coast yacht clubs of the measurement and rating rules now in force, yacht racing was kept alive in a large part by means of the one-design classes.

Take the case of a club of moderate size, of perhaps from 200 to 300 members, with a fleet of forty or fifty, or even eighty, yachts, big and small, and of the miscellaneous character that one usually finds at the club anchorages. There may be in the fleet two or three, or perhaps half a dozen, racing boats of different classes. It is almost impossible for such a club to have any racing of consequence, other than its one or two open regattas, in which members of others clubs are invited to participate. Owners of



NEW YORK YACHT CLUB ONE-DESIGN 30-FOOTERS CROSSING THE LINE IN A RACE ON THE SOUND. EIGHTEEN OF THESE YACHTS WERE DESIGNED AND BUILT BY THE HERRESHOFFS.

cruising boats simply will not race, and, in fact, until within two years there has been no reasonable plan of racing to offer them. With such a club there is practically no activity in the racing line. There may be an annual regatta and, in addition, a spring or fall regatta, and that is the end of it. Excepting for those events, such racing boats as there are in the fleet are away every Saturday and holiday, racing at other clubs. But if such a club, or some of the members of it, get together and organize a one-design class, and build boats of moderate cost, they may arrange for races practically every Saturday in the season if they please, and thus an attraction is created at once for other members of the club.

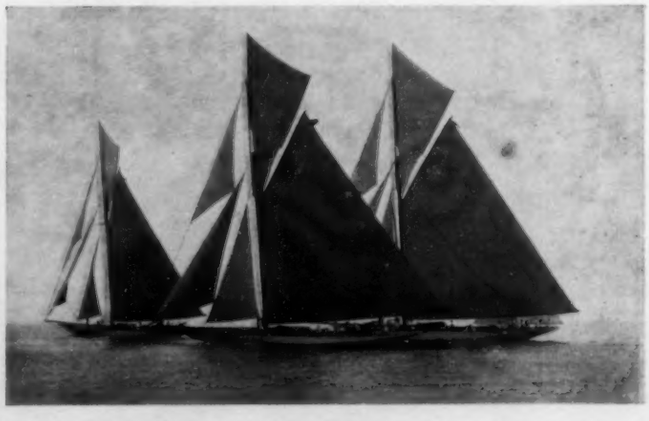
Moreover, the operation of one-design classes has brought new men into the sport. Take, for instance, the case of a man of thirty or forty years of age who never has lived by the water-side, but who finally concludes to make his home for a summer within easy distance of the seashore. He makes friends, naturally, in his new surroundings and presently someone whom he likes and who likes him invites him to a yacht club. He finds it a pleasant place and finds also pleasant companionship among the club members. There may be a few drops of salt water in his blood, entirely unknown to him. Presently he goes out sailing with an acquaintance, and finds that the experience is very much to his liking, and yet it does not occur to him that he can actually sail a boat.

In the course of time, a one-design class of boats of small cost is formed in that club, with half a dozen boats maybe. The novice witnesses a race or two, and his interest in the sport begins to grow. He casually looks over the boats and he discovers, or thinks he does, that the problem of sailing them is not so very complex after all. There are not many strings to pull, not many sails to set, and the matter of steering is simply that of pushing one end of a stick this way or that, in the direction opposite to that one wants to go. The more he sees of these boats, the livelier becomes his interest, and presently he resolves that if any one of them is offered for sale at a low price after the season is over, he will buy it and see what he can do in the game.

The opportunity occurs, and at the opening of the following season he finds himself in the possession of a racing boat. He likewise finds an acquaintance in the club, who is a good sailor but not a yacht owner, to go along with him and teach him how to sail the craft. He goes out in a race and comes in last, or next to last; not so bad, he is learning. Presently, he finishes with two or three boats astern of him; better still, he is getting to be a sailor. And in the course of time, either through his friend's skill, his own adaptability, sheer luck, or through the natural contrariness of things in wind and weather, he finds himself crossing the finish line at the head of the fleet. That man is landed for good and all. He has become a real yachtsman and he will not stop until he is the owner of a racing schooner, always provided that his bank account will allow it.

Now this is not romance. There are dozens of men in the clubs along Long Island Sound who have been "teased into the game" in middle life, and who have become active racing yachtsmen, simply through the interest stimulated by the operation of a one-design class, and more than one club owes its continued existence to the strength it has received from the same source.

But these are generalities. Let's get down to particulars. The idea of a one-design class must be adapted to each particular locality and each particular group of men. First, as to methods of organizing the class. The person who undertakes such a work must make himself thoroughly familiar with sailing conditions, the strength of winds, depth of water, etc., in the vicinity of his club. He must also size up his men and make himself familiar as possible with their temperaments, scale of expenditures, etc. If he be a good sailor, with a thorough knowledge of boats in general, he should then secure from some naval architect a tentative design of a boat that will suit the purpose. If the waters are shallow, he must necessarily select a centerboard boat of light draft. If the water is clear and deep, a keel boat of moderate draft will probably best suit the purpose. Let him get an estimate of cost of building from a reputable boat builder, based on orders for, we will say, five boats, all from the same design. Then let him go about among his fellow members and endeavor to arouse interest in just that boat. The chances are



A RACE OF THE 60-FOOT CLASS OF WHICH WEETAMOE AND NEOLA WERE ONE-DESIGN.

ten to one that if he finally gets a class together, the design will be materially changed, and perhaps thrown overboard for a different one; but it is much better to go among possible buyers with a fairly definite plan of what is to be built, than with simply a vague idea. If the originator is sufficiently energetic and is well liked by the club members, and if these latter have some

interest in racing and some pocket money to spend, it is probable that four or five or more men will commit themselves to the undertaking. Then let the designs be fully worked out and let the contract be placed with a builder who may be relied upon to turn out the boats at the time that he promises he will.

Now, as to the cost of such a boat. The lower the price, the better is the chance of getting a group of men together to build, and as to the price, and consequently the size of the boat, ideas must be adjusted to local conditions. Take, for example, the Manhasset Bay one-design class, built six years ago. The boats were approximately of fifteen feet water line, something over twenty feet over all, with diminutive cabins, and each had about 1,400 pounds of lead bolted to her keel. These boats were fairly fast and were splendid sea craft, and the cost was $450 each. That figure, by the way, is hardly a measure of the expense to-day, as the cost of boat-building has advanced considerably in six years. That they were serviceable, well-built boats is proved by the fact that four of them raced as a class last summer, and have been raced continuously in fact, and raced hard, ever since they were built, which is all one can ask of any boats.

The first race in which these boats ever appeared was the spring event of another club, sailed on a day when the rain poured in torrents and a big sea rolled in from the eastward. The course was a triangle, so small that the boats were never more than two miles distant from the starting point, yet the sea was so heavy that the trucks of these boats disappeared, time after time, from the view of the Regatta Committee on the bridge of a high-sided steam yacht; and yet the boats came home dry, so far as salt water was concerned.

Another one-design class, of the same cost, was built by members of the New Rochelle Yacht Club, a year later. The boats were of about the same size, but carried less ballast and had no cabins. They were a little more of the nature of racing craft, and perhaps were a little faster. Some of these boats, by the way, are still racing, not, however, as a one-design class, but in the regular Class R, with a rating slightly below the maximum limit. Their records are good.

A TYPE OF SUCCESSFUL ONE-DESIGN SLOOP. THIS CLASS, 15 FEET, WAS INSTITUTED IN 1905 BY THE PORT WASHINGTON YACHT CLUB.

But $450, or the equivalent price to-day of something over $500, is a good deal of money and perhaps more than some enthusiasts who would like to go in for one-design racing can afford. Perhaps it would be interesting to such men to know of the New Rochelle one-design class, built in 1907. These boats cost about $350. They are rather small and under the rating rule would measure only about fifteen feet, but they are perfectly rigged and balanced sloops, or jib and mainsail boats as they are sometimes called. Boats of another one-design class, which cost still less, are those of the Manhasset Bug Class, so-called. These have been raced hard for two seasons and are good for several years to come. They are not as symmetrical as the boats just described, the design allowing a cheaper form of construction, something approaching that of a dory, but the cost was only $190 each. Going lower in the scale, boats of the Lark class, which were very popular on Long Island Sound six or seven years ago, were built at a cost of less than $150 each. In fact, the original Lark, built by the man who designed her, and who took no account of his own labor, cost, it is said, only $36. Going to the other extreme, the cost of the New York Yacht Club thirty-footers, so-called, of which eighteen were built in 1905, was $4,000 per boat, and that was a low price for them, when it is considered that they were built by Herreshoff, and the new Class K boats of 1907, Istalena, Winsome and Aurora, depleted the pocketbooks of their owners to the extent of about $20,000 each, while the special so-called 70's, of seven years ago, cost considerably more.

A point to be decided at the outset is the sum of money which can be expended, not by a single man, but by each group of men. Then a boat should be designed, or rather should be outlined, that will fit the price, and its general character should fit the conditions prevailing in the vicinity where it is to be sailed. It is not necessary that any particular number shall be fixed as the limit of a class, although the larger the number, the greater will be the interest in the racing. In various classes on Long Island Sound, five has been fixed as a desirable number, but doubtless that is due in part to the fact that someone once set five as a maximum and others followed on the same line. There isn't much fun to be had out of less than three and the increase will increase very materially with five or six.

It is very important that at the outset the prospective owners shall agree to maintain their boats in similar condition, and to that end it is well to adopt a few rules simply as class rules. One of these should limit the number of times of hauling out for cleaning, painting, etc., so that a boat owner who has little time to spare shall not be caught at a disadvantage. Another should restrict the use of sails to those originally made, or others of the same size, and should prohibit too free a purchase of new sails, excepting when necessary because of damage, and by all means should forbid the use of additional sails, such as a balloon jib, when none is contemplated in the original design. There is one class on Long Island Sound to-day that has got into mischief because of the lack of such a rule at the outset. Most of the members of the class took it for granted that they were to use only the sails originally provided, but one member sailed in a number of races with more head sail than was contemplated. Then protest was made. As this was at a club other than the one in which the boats were enrolled, the Regatta Committee referred the protest back to the class itself, saying that they had no jurisdiction, as the class was accepted simply as a one-design class. But the organizers had forgotten to provide against such an occurrence and therefore the offender had violated no rule, although he had manifestly made use of unfair means to win.

With a class organized and in process of building, the next thing, and an important one, is to arrange a series of races. Give the boats plenty of racing, every Saturday if the owners will go in for it; that is to say, home races in the waters of the club to which the members belong and under the management of its own Regatta Committee. If the club is so situated as to others that there is open racing, it is well to have something in the nature of a season's prize, or perhaps a championship pennant, dependent upon the result of the year's racing as a whole. It is immaterial whether the scheme be arranged on what is known as the point system in Eastern and New York waters, or on the basis of the greatest number of races won. The mathematics of the point system are not perfect and sometimes work to the disadvantage

(Continued on Page 59.)

Motor Boat Design and its Relation to Speed

THE EFFECT OF FORM UPON SPEED IN CONNECTION WITH ABNORMALLY HIGH POWERED VESSELS OF SMALL DIMENSIONS AS DEMONSTRATED IN RECENT PRODUCTIONS

By DANIEL H. COX

Photographs by Edwin Levick

THE problem of designing high speed motor boats has been given much attention of late years by naval architects in all parts of the world, and, due to the remarkable developments of the internal combustion engine, which has made possible the installation in small hulls of relatively enormous power, speeds have been obtained that a short time past would have been considered far beyond the bounds of possibility.

The average layman does not appreciate as fully as does the designer what strides have been made in this direction. To the former, twenty-five knots is twenty-five knots merely, whether in a transatlantic liner of 784 feet in length or a racing motor boat 49 feet long. He may have a vague idea that relative size has some bearing upon the question of possible speed when he sees a small rowboat practically standing on end and nearly swamped by waves of its own making in its efforts to follow an apparently slow-moving steamer to which it is attached by a painter; but, in all probability the true significance of this has not actually occurred to him.

The designer, on the other hand, knows that size, and more particularly length, is most important to him when he wishes to obtain a given speed without the expenditure of unusual power. Accordingly, it is evident that if, in order to determine the merit of the design, a comparison is desired of the speeds obtained and power required in vessels of very different size, such comparison must not be made at the same actual speed for each vessel, but at certain definite speeds determined in some way by their size.

THIS CUT SHOWS QUITE CLEARLY THE SYSTEM OF WAVES PRODUCED BY A LAUNCH TRAVELING IN SMOOTH WATER.

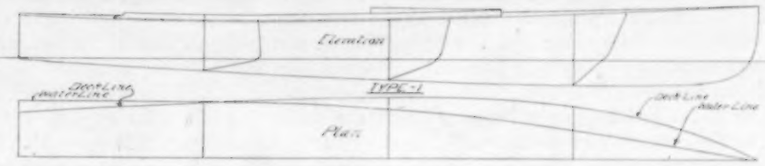
It can be demonstrated mathematically, and has been proved by experiment, that such comparisons should be made at speeds that bear the same numerical relation to each other as do the square roots of the lengths of the vessels in question, and that the problem of determining the power to drive a large ship or a small launch at certain speeds can be approached by the same methods when the speeds at which they move bear this relation to each other, and at no other speeds. Taking, for instance, the 784-foot steamship and the 49-foot launch. The square root of the former is 28, of the latter 7. It follows, then, that the speed of the liner at which her performance may be said to be in the same class as the launch, must be four times the speed of the launch. In other words, if the launch is making seven knots, its performance should be compared with the steamship going twenty-eight knots. This merely indicates that as a mechanical problem, having reference to speed alone and taking no account of the commercial value as effected by passenger and freight requirements, even the present high speeds of the large sea-going ships will have to be about quadrupled before their performance becomes as worthy of remark as does the speed secured by the racing motor boats.

If the speeds at which the two vessels are traveling are not in this ratio, then all problems connected with power and speed must be approached differently in the two cases, the degree of difference depending upon the divergence from this proper speed ratio. This fact is due to the complex nature of the forces tending to retard a vessel's motion through the water. The total resistance which a vessel presents to its propelling machinery is composed of two components; the first, called the skin friction resistance, depending, at a given speed, almost entirely upon the number of square feet of surface on, and the smoothness of that portion of the vessel's hull that is below water; and the second, or wave making resistance, depending almost entirely upon the vessel's form and its weight or displacement tonnage. The skin resistance is due to the friction of the water against the vessel's bottom, and the wave making resistance to the displacement of the water by the vessel's passage through it. These two components of the total resistance follow entirely different laws, and are of relatively different importance at different speeds in any given vessel.

Skin resistance varies, to all intents and purposes, as the square of the speed of the vessel, and the wave making as the fourth power of her speed. If, for example, a vessel's speed should be increased from ten to twenty knots, while the frictional resistance at the higher speed would be four times that at the lower, the wave making resistance would be sixteen times greater than at the ten knots. Thus, at high speeds, the wave making resistance must, of necessity, represent a much larger proportion of the total resistance than at low speeds, and, as a matter of fact, at quite low speeds the wave making resistance is of little or no importance, but at high speeds it is by far the greater element of the two.

That such would probably be the case would be inferred by anyone giving thought to the subject and seeing a vessel leaving a dock and proceeding at a gradually increasing speed in smooth

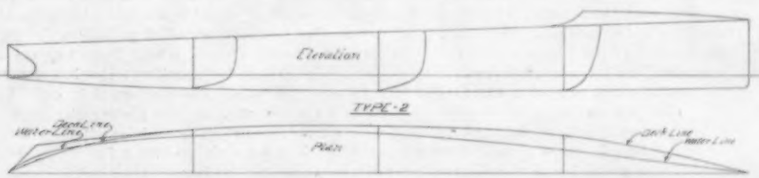
water. At first there is little or no disturbance of the water surface, and then, as the speed increases, a slight wave crest will appear on either bow, which will continue to become more marked, and a similar wave will be noticed aft on each side. As the maximum speed is approached, these waves will be seen—if the vessel is of usual form and fair speed—to be of considerable size and to form two series of diverging crests on each side of the ship, extending to an apparently indefinite distance.

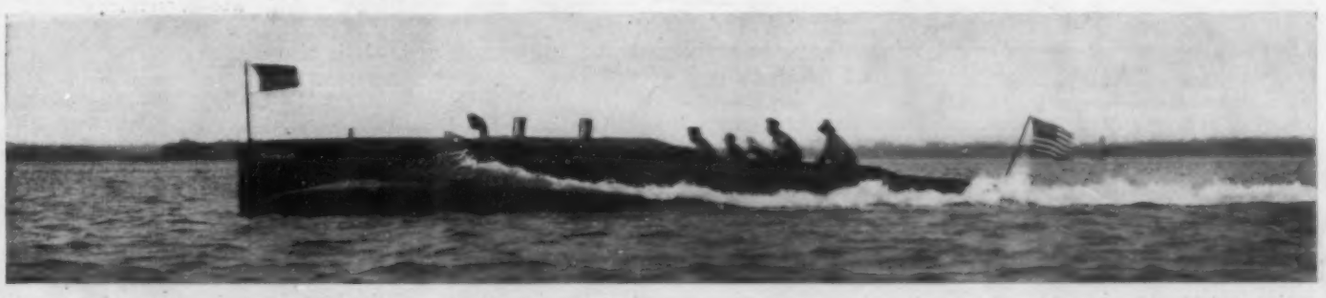


An illustration of what is known as the "all entrance and all run" design, being only slightly modified for appearance and better seaworthy qualities. The water line is a triangle, with apex at the bow, thus placing the maximum beam at the stern, and the keel runs in a straight line, giving the maximum depth at the stem. This form of hull has V shaped sections forward, the dead rise or angle of floor decreasing rapidly as we pass aft until the sections at and near the stern are practically flat-bottomed. The photograph shows one of these boats running at full speed. It will be seen that although the bow has lifted, the deep forefoot is still submerged. The intention of carrying the extreme depth so far forward is to provide a sharp entrance for the boat even at her running trim, and to reduce the unpleasant pounding and spray throwing experienced by the running out boats.—Irene.

Depending upon the length of the vessel and the speed at which she is moving there will be, in addition, one or more wave crests along her length that will be more in the nature of a local displacement of the water than a wave series, and at the stern, or some distance back of it if the speed be high, a wave crest at right angles to the vessel's course. This wave crest will maintain its position relative to the ship unchanged and will be followed at regular intervals by a series of similar wave crests also traveling at the same speed as the ship. Thus it will be seen that when a vessel has obtained a certain headway there will be produced by her motion through the water and will proceed with her, a very complex wave formation of perfectly regular and definite character. The extent and position of these waves will be different for each speed, and in different vessels of the same speed, unlike in model, will be quite dissimilar. The production of these waves must naturally require the expenditure of much energy.

The average passenger ship is run at such speeds that the wave making resistance is of considerable importance, in the faster vessels rising to as much as fifty per cent. of the total. Under these conditions the naval architect who wants to reach a given speed on a vessel of a certain size with the least expenditure of power, finds that by knowledge and care he can, by even slightly altering the proportions of his vessel, make a very considerable difference in her performance. The proportion of length to beam, the shape of the midship section, the amount and disposition of the displacement or buoyancy, the character of the entrance and run, all have, to a greater or less extent, a definite and appreciable effect. In other words, in such cases the architect, having at his disposal machinery of a certain power, and being called upon to design a hull of a given size, finds that by varying the character of his hull he can secure, with certain forms, speeds considerably in excess of those reached by other vessels of the same size and power; or, which amounts to the same thing, he can secure a desired speed with less power and consequently less coal than these other vessels require. It will be seen, then, that under these conditions, the lines of such a vessel are a matter of the greatest importance to her owners, and it is naturally given careful attention by the

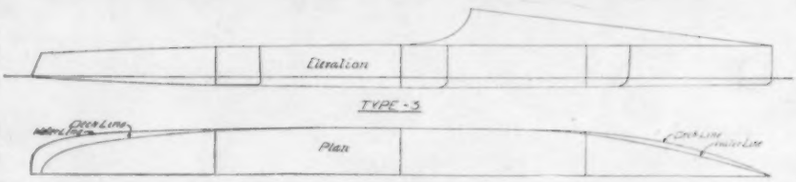




This shows a design that is not radical in any one element, the designer having produced a hull of easy entrance and run and undoubtedly a form easy to drive. There is a certain amount of dead rise at all stations. The extreme beam, while considerably aft of the center is not abnormally so. The forward sections are decidedly U shaped and the greatest depth of hull is about amidships. The beam is rather less in proportion to length than is usual in vessels of this type. Generally speaking, this form is one that might be expected to drive easily, without unusual lifting forward or change of trim, and, moreover, good results should be expected when running in a seaway, compared with the more extreme models. These conclusions are borne out by actual results. The photograph shows such a hull running at high speed with but a slight alteration in trim from the normal condition. When running at extreme speed this hull lifts forward somewhat more than as shown in this photograph.—Dixie.

experts. The result, as shown by a rough comparison of the various modern transatlantic liners, is that, working entirely independently of each other, these experts of various nationalities, each approaching the problem from his own point of view, have produced vessels for the various companies that in the essential portions of the design are very similar. As already shown, this problem is analogous, as far as the relations of power and speed are concerned, to that offered in the design of a 49-foot launch running at a speed of about seven knots. This consensus of opinion among naval architects in regard to the desirable form of hull under the given conditions would indicate that no great increase in speed may be looked for in such vessels unless the propelling machinery can be greatly increased in efficiency or the owners of the vessel agree to disregard their passenger and cargo carrying value.

It is by no means unusual at the present time to find speeds of twenty-five knots and over developed by motor boats of less than fifty feet in length. As these vessels pass in speed from such moderate figures as seven knots when they are running under the same relative conditions as the transatlantic liner to such extremes as twenty-five knots, the problem of their propulsion changes very materially.



Illustrating the form of hull adopted when the designer wishes to take the fullest advantage of the lifting action, while not departing from an actual ship-shaped vessel. The hull is practically flat-bottomed throughout, having no dead rise whatever. The water line beam is carried of uniform width the greater part of the length, being brought in abruptly forward, forming a most blunt entrance compared with the usual designs. The depth of hull, also, is fairly uniform, running up gradually aft, and being slightly less forward than amidships. The pronounced U or club foot sections forward cause the bow to lift under way, and the photograph shows a hull of this type running with a large proportion of their length actually out of water. When running into a head sea such hulls naturally pound badly, and the fine spray thrown up by the bluff entrance is very annoying to those on board.

For a considerable range of speed, say up to sixteen knots, the resistance, and hence the horsepower required, keeps increasing rapidly, that portion due to the wave making resistance becoming more and more the controlling factor until it reaches as much as seventy-five per cent. of the total resistance. During this moderate increase of speed values, the architect still finds, as he does at lower speeds, that care and skill in designing the lines of his hull will help him materially in securing maximum speed with a given power, or attaining a certain speed with the minimum of power. Beyond a certain point, however, the relations of power and speed are radically altered, and calculations based upon the same methods employed for the lower speeds will be found in error.

Anyone having seen these small fast launches running at full speed must have noticed the considerable difference between the water line at rest and that line while under way. In some instances the vessel's forefoot runs out clear of the water, the keel being visible nearly as far aft as amidships. In other cases, the whole hull seems to rise bodily without changing its inclination to a great extent. In all cases it will be found, by actual measurement, that the mean water line while under way is considerably below what it is at rest, or, in other words, that the vessel is not displacing as much water while in motion as when still in the water.

Now, as the vessel's weight is unchanged and as the upward supporting force of the water must be equal to this weight, it follows that as the vessel is higher out of water the upward force of buoyancy, which depends upon the volume of water displaced by the hull, is less and some additional force must have entered into the problem. This upward force is the upward component of the fluid pressure on the vessel's hull, caused by its rapid motion through the water. An excellent proof that such a force does exist, is shown by the simple experiment of skipping a flat stone along the surface of the water. The stone is much heavier than the water it displaces and when placed in the water will quickly sink. If, however, it is projected with some velocity along the surface, it will skim on top as if it were actually floating.

It is the action of this force that is largely responsible for the remarkable speeds that have been attained in the small vessels in question. The existence of it has been, of course, long appreciated by those interested in marine propulsion, but the extent of its influence has been a matter of discussion. It is evident that, if the vessel is held by this force above its natural level of flotation, a portion of the propulsive power must be employed in maintaining the vessel's weight in this position and will not be directly available for driving the vessel ahead. In other words, another element of resistance is added to the two already considered. It is also evident that by this lifting action the two other components of the resistance, namely, skin friction and wave making, will be affected: the first must, of course, be reduced, as it depends entirely upon the area of the submerged hull. The second, it would seem natural to expect, would be reduced also, as the volume of water displaced in a given time by the vessel's passage would be less. But the problem here is complicated by the fact, at these high speeds, of the marked alteration in the vessel's line of flotation. The change in trim caused by the lifting of the bow is so great in some instances as to alter the entrance of the boat from the fine wedge existing when the vessel is at rest, to a blunt and totally different form. It appears, therefore, that there is considerable room for discussion as to whether the decrease in resistance effected by the lessened immersion is or is not, in any particular case, offset by the force expended in sustaining this false level.

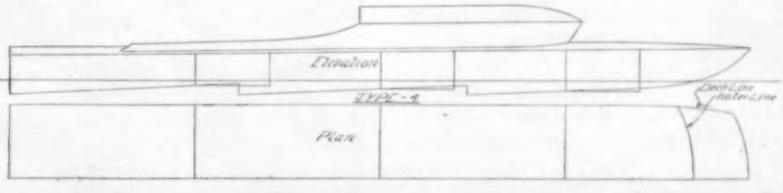
If the result of the action is to be a reduced resistance, we should naturally endeavor to take the fullest advantage of it. Hulls can be built of such form, or false planes attached to the hull in such a manner as to increase the action of the force, but in general the forms so produced will appear likely to increase greatly the wave making resistance—at low speeds they undoubtedly would.

A country clergyman in England became interested in this problem many years ago and was satisfied that it could be solved. He built a hull, to which were attached inclined planes, which he prophesied would lift his vessel out of the water and enable it to skim along the surface at enormous speed. He failed to accomplish this, and the eminent mathematicians of the day, after his failure, proved conclusively, to themselves at least, that the principle was false, that the resistance would be increased by the lifting action more than it would be decreased by the alteration in the flotation level, and that it was another case of a man lifting himself by his boot straps.

There the matter rested for many years and only recently has it been demonstrated that this Englishman was far ahead of his time. His failure to obtain the results he expected was not due to any flaw in his reasoning, but to the inefficient machinery upon which he had to rely for propulsion, the weight of his completed vessel being so great in proportion to this propelling force that no appreciable change in flotation was effected, while, at the same time, the full effect of the unfair form of his craft in producing abnormal waves and eddies made its performance a very poor one.

The remarkable development of the machinery used in racing motor boats has produced a large number of small vessels, in the design of which many totally dissimilar forms have been employed, and an opportunity to study this question from a practical point of view has been presented. That a decrease in resistance from that expected was effected in some manner in certain of these vessels was evident from the speeds which they attained with given power. No amount of figuring upon the ordinary basis of skin friction and wave making resistance would explain why such speeds were possible, the calculated resistance calling for a large excess of horsepower over that actually contained in the machinery. An explanation being required, it was sought and placed most properly in the lifting action under discussion. A full appreciation of the situation and a proper adjustment of the values of the various forces was of course difficult, the problem not being one capable of exact mathematical calculation. Since the correctness of the principle has been accepted and designers have endeavored to take advantage of it in high speed boats, some successes and many failures have been made. The latter have mostly been due to lack of appreciation of what is really the essense of the problem, namely, that for the successful application of the principle the weight of the completed vessel must be light in comparison to the propelling power.

That the displacement of these boats is the controlling factor, and has much more influence in the speeds obtained than any other element of their design, assuming that the machinery is efficient and that no serious error has been made in the propeller design, can be seen from a comparison of the actual results in different vessels of totally dissimilar form, but of approximately the same size and having machinery of about the same power. It is somewhat difficult to pass an intelligent criticism on the results obtained in any one particular test of speed, as the conditions under which the vessels are run naturally bears upon the problem. It is found that, as between two vessels, one may in smooth water be much faster than the other, while in rough water the conditions will be reversed, and the really slower boat may, by reason of her seaworthiness, be able to proceed at a considerably faster rate than her competitor. This fact makes it necessary to consider the problem from two entirely distinct standpoints: First, when it is desired to secure the maximum speed in absolutely smooth water; second, when the object in the design is to produce a boat that, under the ordinary conditions in which she will be raced, will be able to defeat her competitors. Under the first condition, there is no doubt that the desired result can be best obtained by carrying the design to the form that will give the extreme advantage of the lifting power, of course assuming that the weight of hull and machinery is reduced to a minimum. The problem of propulsion under these circumstances is so similar to that of an airship of the heavier than air type, moving in the atmosphere when undisturbed by air currents, that the analogy is easily seen. The propelling fluid in each instance is a propeller working in a fluid. A lifting action is secured in each instance by the pressure of the fluid through which the vessel is passing up inclined planes, whether these planes be portions of the hull itself or a series of entirely separate planes attached to the hull for the purpose of securing this action. When the aëroplane is brought to rest it will, being heavier than the air, sink down until its weight is supported by the earth. When the hydroplane comes to a standstill and the lifting action of its planes is lost, it will sink until its hull is sufficiently deep in the water to secure the necessary upward buoyancy to support its weight.



The water gliding craft has an immense advan-

(Continued on Page 56.)

Here is shown the extreme development of the hydroplane, having a notched bottom to produce the lifting action. This hull, of uniform beam from end to end, is absolutely flat-bottomed with square sections, the bow being sloped up slightly and rounded to avoid running under when under way. The photograph shows a small hull of this type running at full speed, and the lifting action can be clearly seen. Naturally, such a craft as this would be in trouble in rough water. Other hydroplanes have been built, in which the hull proper is only a buoyancy chamber to carry the weight of machinery while at rest, the lifting planes being entirely separate from the hull and attached to it by a rigid framework.—Ricochet Nautilus.

At the Head of Lake Erie

THE SEASON OF RACING AT TOLEDO WAS THE MOST SUCCESSFUL IN YEARS, NOT ONLY IN POINT OF ENTHUSIASM, BUT ALSO AS REGARDS THE NUMBER OF MOTOR AND SAIL CRAFT ENTERED IN THE VARIOUS EVENTS —THE FREE-FOR-ALL RACE—OTHER CONTESTS WHICH CONTRIBUTED TO A VERY INTERESTING SEASON

By WILLIAM W. PERRY

LOCATED at the head of Lake Erie, Toledo has one of the finest harbors on the Great Lakes; and by Government assistance has a straight channel from the heart of the City to the Lake, a distance of over thirteen miles, making the Maumee River and Bay a Mecca for yachting.

Pleasure craft abound here in great numbers, from the small 13-foot dory to the big ocean-going sloop Shark and yawl Hussar II. The same can be said of power boats; they range in size from a converted rowboat to the big 65-foot cruiser Whim.

Toledo's season of 1907 opened as usual on Decoration Day with the M. R. Y. C.'s open motor boat race on their up-river course, opposite Walbridge Park.

The day dawned with a northwest gale, cloudy and very disagreeable, but, nevertheless, there were eleven starters.

The event was handily won by Captain Jack Brown's Mildred, a converted sloop propelled by a 12 horsepower Pope engine. There was a power boat race on June 16th, under the auspices of the M. R. Y. C., open to all power boats under 25 feet water line for a Loving Cup. This race was over the regular up-river course of twelve miles, three times around. Gladys, owned by Mr. Dan E. Jones, won the race and the cup. At the big regatta at Monroe Piers on July 4th, 5th and 6th, Toledo yachtsmen as usual carried off their share of the prizes.

BEENER, CHAMPION IN 20-FOOT CLASS, 1907. OWNED BY D. EGNER.

The big event of the season was the Class and Free-for-All Race on July 4th at Monroe Piers, which was sailed in a light wind of only about six miles velocity and a choppy sea. The wind was north, shifting to northwest, and the course was triangular, four miles to the leg, once around.

Elsie won time prize and the cup, making two heats to her credit on this trophy.

SUMMARY.—THURSDAY, JULY 4. FREE-FOR-ALL AND CLASS RACE.

Boat.	Club.	Skipper.	Start.	Finish.	Elapsed Time.	Corrected Time.
FORTY-FOOT CLASS.						
Czarina	T. Y. C.	Gallagher	1 30	3 47 13	2 17 13	2 13 59
Ethel	T. Y. C.	Decker	1 30	3 22 59	1 52 59	1 [illegible] 45
TWENTY-FIVE-FOOT CLASS.						
Elsie	T. Y. C.	Mathias	1 30	3 16 16	1 46 16	1 27 56
Sabrina	M. Y. C.	Strong	1 30	3 29 30	1 59 30	1 41 10
TWENTY-ONE-FOOT CLASS.						
Spray	D. Y. C.	Price	1 40	3 23 25	. . . . .	1 43 25
Otsiketa	D. C. C.	Jennings	1 40	3 23 59	. . . . .	1 43 59
Ste. Claire	M. Y. C.	Sterling	1 40	3 24 41	. . . . .	1 44 41
Cleveland	C. Y. C.	Cobb	1 40	3 26 09	. . . . .	1 46 09
Borealis	Tawas Beach Y. A.	Davock	1 40	3 28 07	. . . . .	1 48 07
TWENTY-FOOT CLASS.						
Beener	M. R. Y. C.	Egner	1 30	3 46 30	2 16 30	1 49 42
Mildred	D. Y. C.	Luden	1 30	3 45 12	2 15 12	1 48 25
Mermaid	D. Y. C.	Hobart	1 30	3 27 08	1 57 08	1 30 19
EIGHTEEN-FOOT CLASS.						
Oriole	Port Huron Y. C.	Armstrong	1 30	3 41 56	2 11 56	1 45 07
Senorita	D. Y. C.	Schaale	1 30	3 46 00	2 16 00	1 49 11
Wrinkle	T. Y. C.	Pritchard	1 30	3 25 16	1 55 16	1 28 27
Mirage	Port Huron Y. C.	Haynes	1 30	3 36 40	2 06 40	1 39 51
SIXTEEN-FOOT CLASS.						
Gamble	D. C. C.	Warren	1 30	3 30 38	2 00 38	1 33 49
Escape	D. Y. C.	McCrossen	1 30	3 44 12	2 14 12	1 47 23
Sella II	M. R. Y. C.	Luedtke	1 30	3 45 42	2 15 42	1 48 53
MISCELLANEOUS BOATS.						
Shark	T. Y. C.	Craig	1 30	3 10 20	1 40 20	1 40 20
Enright	T. Y. C.	Peck	1 30	3 27 02	1 57 02	1 55 51
Dixie	XX.	Botsford	1 30	3 45 26	2 15 26	2 03 23
Juanita	T. Y. C.	Boatrel	1 30	3 31 45	2 01 45	1 49 42

Judges—E. S. Wilder, A. L. Bech and Charles W. Kotcher.

On Friday and Saturday the Class Races were continued and Captain Pritchard's Wrinkle won the championship flag. She finished second in the Free-for-All on Thursday.

From July 14th to the 21st the Inter-Lake Yachting Association held its annual regatta at Put-in-Bay, and the Toledo fleet was there at the head of the list in point of attendance, but did not do much racing, except in the 16-foot, universal and catboat classes.

In the 16-foot class, Sella II (an ex-Massachusetts Bay boat) won second place. In the catboat class Toledo had all the boats, so won all the prizes and won second in the Universal Class.

The Toledo Yacht Club's long distance races on Lake Erie for both sail and power boats, held August 8th, 9th, 10th and 11th, were as a whole a disappointment in the number of entries received, considering the hard work and time that had been spent by the committee. The special match race for the winners of the ocean and lake motor boat races, scheduled to start on August 9th from Toledo to Detroit River Light, to Ashtabula, Ohio, and return, 300 miles, was abandoned at the last moment.

At eight o'clock Saturday morning, August 10th, Westwind was started on her 93-mile run from the Club House to Detroit River Light, back to Toledo Light, thence to Detroit River Light and return to starting point, the course for Class C motor boats, 35 to 50 feet over all. From then until 10.10 a.m., boats of this class were sent across the line.

ELSIE, 25-FOOTER. WINNER OF TIME PRIZE IN FREE-FOR-ALL AT MONROE PIERS, JULY 4TH.

At noon, Nomad of Toledo, in Class B, was started on her voyage of 191 (land) miles, from Toledo Light to Detroit River Light, thence to the Cleveland Water Works crib and return to Toledo Light through the south passage in the Lake Erie islands. Clymere of Detroit got over the line at 12.16.37 p.m., followed by Wistara, the Cleveland entry, over three hours later, at 3.30.56. She was followed four minutes later by the first boat in Class A, Thelma of Sandusky, O., which traveled over the same course as Class B.

VICE-COMMODORE DOELKER'S RES-Q.

Wilanna of Detroit, with her twin screw 40 horsepower engines, was started at 4.21 p.m.; then came a long, tiresome wait of another three hours, after which the big 65-foot Grayling of Detroit was allowed to let loose her three 40 horsepower motors, driving triple screws.

The sail-boat race, over the same course as that for Class A and B power boats, was started at 6.50 p.m. on Friday, August 9th. The race for the "stay-at-homes" was held on Maumee Bay on Saturday, August 12th, and attracted a fleet of sixteen sailing craft, including sloops, yawls and catboats.

The first of the long distance racers to cross the line was Foam, Class C, scratch in her class, at 9.09.23, Saturday, p.m., followed by Paul Jones' Independence (last year's winner over a somewhat longer course) at 9.15.10 p.m. The first to arrive in Class A was Wilanna, at 9.59.10 a.m. (Sunday), followed a little less than two hours by Clymere, in Class B, at 11.44.30 a.m.

The big Herreshoff ocean-going sloop, Shark, was the first of the windjammers to finish, crossing the line at 11.15 p.m. on Saturday, consuming but 28 hours and 25 minutes to cover nearly 200 miles. It was her first big victory in fresh water.

Commodore Craig of Shark reported a severe fog and calm at the mouth of the Detroit River, and upon his arrival in the vicinity of the water works crib off Cleveland was unable for a time to locate the Light, because of volumes of thick smoke being blown from the city by a land breeze. Other captains reported the same conditions off Cleveland, and some lost from one to four hours by running past the crib. On the last leg to the entrance of the south passage, Shark bowled along in a twenty-mile breeze and for nearly fifty miles was able to keep up with a large freighter.

The only race of the season that the Toledo Power Boat Club held was on Sunday, Sept. 22d, for the Ralaco Cup. The course was from Walbridge Park, down the river and bay to Toledo Light and return, 36 miles. Capt. Harry Laughton's Marion was the winner; Inez, owned by Butler and Verrill, was second.

SHARK, WINNER OF TOLEDO YACHT CLUB LONG DISTANCE RACE AND "THE MILLS TROPHY." OWNED AND RACED BY COM. GEORGE CRAIG, TOLEDO YACHT CLUB.

WRINKLE, WELL-KNOWN CHAMPION IN THE OLD 18-FOOT CLASS. OWNED AND RACED BY MR. FRED PRITCHARD.

SELLA II, AN EX-MASSACHUSETTS BAY BOAT. CHAMPION 16-FOOT CLASS, 1907, MAUMEE RIVER YACHT CLUB.

Another Lipton Cup

AS THIS magazine goes to press we have word of the acceptance by the Brooklyn Yacht Club of the $1,000 cup, offered by Sir Thomas Lipton as a trophy for an ocean race to be held under the auspices of the Gravesend Bay organization. This club was the first to take up ocean racing to Bermuda, and when the Corinthian Yacht Club last fall went ahead with preparations for a thresh to Bermuda next June, the Brooklyn yachtsmen were impressed with the belief that they had been snubbed. As a consequence, it was decided to arrange another ocean race, but not to Bermuda. In reply to a letter from Colonel David E. Austen, Sir Thomas Lipton offered a valuable cup as a trophy for this race, but stated that because of the fact that he was building a 23-metre cutter for racing on the Solent, would preclude his making any international engagements for the season of 1908. The International Cup Committee of the Club appointed to arrange a course for the race, have already made progress in the work of planning for the event, which it is hoped will rival in importance that of the Bermuda Race.

In all probability, the course will be from Newport around Block Island and Northeast End Lightship, off Cape May, with the finishing line in Gravesend Bay. No better course could be selected, as the racing of a fleet of yachts along the course would mean the reporting of their progress at different points, creating a wide interest in the struggle. A large fleet of steam yachts undoubtedly would accompany the racers, so that their owners and guests could enjoy the deep sea sport.

Around the Horn—The Log of a Second Mate

By T. JENKINS HAINS

[EDITOR'S NOTE.—We present herewith the first instalment of another serial by T. Jenkins Hains, well known as one of the foremost of contemporary American sea writers. As in the "Cruise of the Edna," it is a personal narrative, based on facts recorded in the log which the author kept while serving as second mate on a ship bound from New York to San Francisco. It is a thrilling narrative. We do not exaggerate when we say that never has the deep sea in all its moods been so vividly set before us as in this simple log. The dangers, the hardships and all that go to make up the life of a sailor on a long voyage, day after day, month after month, are faithfully noted.]

Chapter I.

THERE she lay, Silver Sea, A1 clipper ship, bound from New York to San Francisco. At least, that was what the Maritime Register called her, and there she was at the dock, loading railroad iron at three hatches.

"Pretty ship, eh, Tom?" Tom was my brother, and not a sailor, for he is an old soldier of the regular army and all that he knows about ropes he has learned from dragging caissons around after batteries, when they fire and fall back.

"Yes, look at her sheer strake and polished copper lighthouses forward, and what long, tapering spars, and what clean, white decks and shining brass-work.

"Really, Tom, you had better take a leave of absence and make the voyage along with me, it would do you good."

"If anything would tempt me, it would be the looks of that ship," he replied. We had been walking slowly towards her and by this time were standing near the mizzen rigging.

"Let's go on board," I said, and climbed from the channels to the deck, closely followed by Tom.

There was an air of order and cleanliness about the ship that was refreshing. All the paint work was scrupulously clean, and the decks looked as though they had just been holy-stoned. We went forward and there met the mate, a small, sturdy man, with only one eye and only one tooth—just in front—who, in answer to our inquiries, told us that the captain was on shore, but would be back in half an hour. I wanted the second's berth and wanted it badly, and I intended to go in that ship. We dreaded to interview the captain.

There was nothing better to do; so climbing back onto the poop, we sat down and waited, watching the busy scene around us.

In the next dock lay a big Indiaman, loading a miscellaneous cargo for Calcutta. On her high bridge strutted a small, bow-legged man, who gave his orders with a wave of the hand that betokened a well-defined appreciation of his authority. We could not hear his voice, for all around were the cries of stevedores' men and the creaking of blocks, as the noisy "donkey-engines" hoisted and lowered cargo.

A little farther on lay a Spanish steamship, from some tropical port, unloading bananas. Bananas all around her everywhere—on deck, on the dock, in wagons and being passed over the side. How the hungry "wharf rat" sneaked and wormed himself along the docks, with eyes fixed on the coveted fruit. Braving dangers from furious drivers and heavy drays, but waiting patiently until some unlucky bunch would fall and scatter, and then rush in, unmindful of threats and curses, to grab some of the loose fruit before making off.

While sitting there and enjoying these scenes, I was suddenly startled by a deep bass voice, that sounded like a waxed cord being drawn through the bottom of a large drum; and turning, found that the captain had come on board.

He walked aft without noticing us, and just as he was about to go down the companionway into the cabin, I went up and spoke to him.

He drew back and looked at me searchingly, but said nothing.

"Captain," said I, in my most persuasive tone, "you have a fine ship and I am thinking of taking passage with you," reaching for my certificate at the same time.

"Good enough ship," he growled in a voice like a bull hippopotamus, and drew still farther away, glaring at me in such a savage manner that I began to wonder how I could get away. I had just half formed a plan of escape, when Tom came up and formally introduced himself, and I stated my desire to go if the second mate's berth was vacant. This had the effect of calming his anxiety, and I afterwards found out that some ill-used sailors had made it convenient for him to keep his whereabouts from being too widely known, up to the last week before the vessel sailed.

After a few minutes' talk, he invited us below, glanced at my papers and grunted. "This is the cabin," he announced, as we landed at the foot of the companionway. There was no contradicting this statement, for it was strictly true, and even if it had not been so, no sane man would have provoked that voice into an argument, especially if he intended sailing in the same ship with it. "Here's where you'll sleep," he added, as he opened the door of a good-sized and well-ventilated stateroom, on the side relegated to second mates in the forward cabin.

Tom and I were so well pleased with the fittings down below, that I ventured to ask the rating.

"Rate," he roared, "haw, haw—we'll fix that. You'll get what's coming to you all right; no fear."

"If that is the case," said I, and my voice sounded far away and faintly, "you can count on me. By the way, when do you sail?"

"Friday morning, at high water; an' if you ain't here, you'll get left. Have a drink?"

We were afraid to say "No," so we took one, and after gathering courage from it, I announced that I would have my things sent down the following day, as it was then Wednesday. Tom and I then started up-town again.

As we clambered over the side, I noticed a rough-looking man standing on the dock, smoking a short clay pipe and gazing smilingly at us.

"I say, my friend," he said, addressing me, "air yer going to sail in that there ship?"

I admitted that I had some thought of going in her.

"Well, I suppose yer know Jim Benson. If yer don't, yer better carry a gatling gun an' a few pizened arrers along with yer."

Without thanking this worthy for his advice, we walked on up-town, not altogether pleased with our first impressions of the notorious Benson, the hardest man—as I afterwards found out—in the Yankee deep-water fleet.

He was a big man all through; big head, big frame though spare, big hands, big feet, big features and a big voice that issued forth as from a cavern in his big grizzled beard and sounded like the snorting of a bass horn.

When making a voyage that will probably last half a year, it is well to know who will be the captain of the ship, for at sea there is no higher authority than his will, and there is no appeal from his decision in all matters. However, I thought of the "gatling gun and pizened arrers" and concluded to risk a voyage in this clipper. In fact, I had "sized" this captain up to be nothing more than a man who was capable of commanding a ship, and while acting in this capacity, intended that no one else should encroach upon the authority granted him by law. This

"A GOOD SHIP FOR A LONG SEA VOYAGE."

is the kind of man an officer likes for a sailing packet and, although rough discipline does sometimes degenerate into reckless brutality, such skippers are the best enduring sailors for the often hopeless, and always desperate fight with an overloaded ship in the fierce hurricanes of the Pacific-Antarctic Drift.

Tom and I both came to the conclusion that we had found a good ship for a long sea voyage. We went to the hotel and fixed ourselves to have a good time before the ship sailed, after the manner of seamen. This was a fairly good hotel and, like all the small houses in New York, it was fitted with some of the conveniences, including ropes for fire-escapes. Of course, I must investigate everything, so the next morning, before Tom was up, I lowered away the fire-escape into the street, just to see what it would look like. In a few minutes a man rushed into the room, wanting to know what was the matter. I was a little startled at the liberties that I had taken with the machine, but quickly recovered my composure and, hiding my features as I slipped on my shirt, cooly informed the clerk, that "my friend was very timid and couldn't sleep well unless the rope hung dangling about the heads of the pedestrians on the Bowery." The noise of our conversation awoke Tom, who was very indignant at my accusations. However, it was too late. The clerk left with profuse apologies and a smile of pity for my brother.

After a supper together that evening, the last for many a long day, we made our way toward the docks. I had concluded that it would be best to pass the night on the vessel, as it would be high water early in the morning and I feared getting left.

On reaching the ship we found that she was deserted by everybody except the watchman and the steward, who informed us that all hands, including the captain, were up-town on a last drunk. The cabin was locked and the only thing to do was to wait until they came back, which would be before daylight. With this cheerful piece of intelligence, we went into the messroom and waited for somebody or something to turn up.

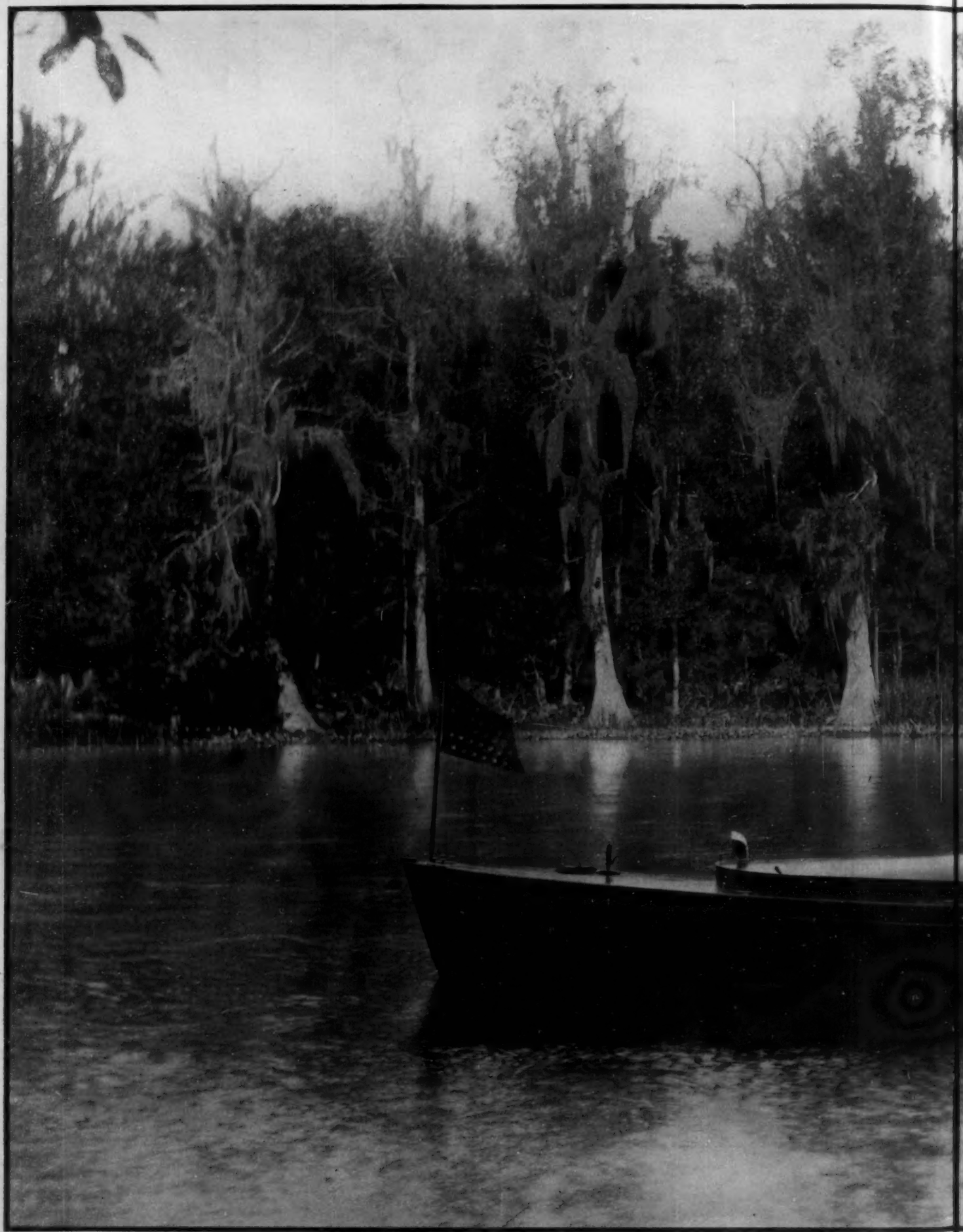
It was not quite midnight when we arrived, and about two o'clock the first mate and third mate came aboard with several bottles of whiskey.

Bidding Tom good-night, as he promised to come down in the morning to say good-bye, I turned my attention to the mates, and for two more hours was kept awake by being plied alternately with wonderful yarns and more wonderful whiskey. At four the captain arrived and I crept into my bunk for a couple of hours to try and rest a little.

It seemed as though I had just closed my eyes, when I was awakened by the tramping of feet on the deck overhead and the deep voice of the captain giving orders to clear the ship for getting under way. I turned out and, going on deck, found that it was nearly daylight and everything in readiness to cast off from the dock as soon as the "crimp" could get the crew together and bring them on board.

In about half an hour they came. Unhappy devils, just getting over their last debauch, their sodden faces showing the effects of their miserable "advance" money, or rather the delirious pleasures purchased with it. Poor slaves! For that is about all deep-water sailors are; the negro of the southern plantation had a far happier time before the war than has the white slave of the sea to-day. He comes ashore after a long voyage of half a year and gets his pay, about eighteen dollars per month, half of which the captain sees is invested in the "slop-chest." If he has forty dollars left, forty hard-earned dollars, wrung from many a wild night's work out on a frozen foot-rope in a killing gale—will, in all probability, spend it like—a sailor, the first night that he sets foot on the beach, thirty for clothes, five for

(Continued on page 58.)



CRUISING IN THE SOUTHLAND. MOTOR BOA HO

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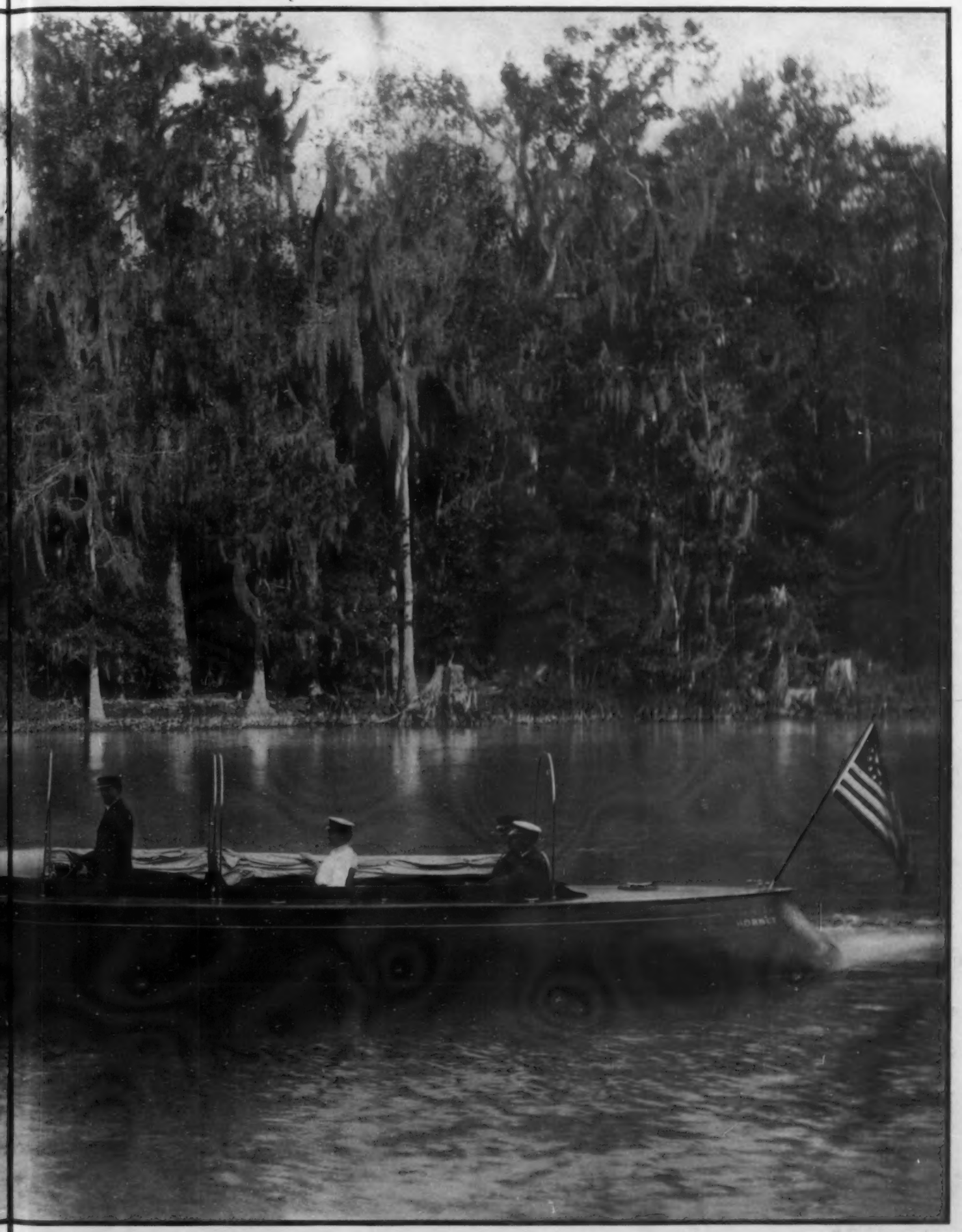
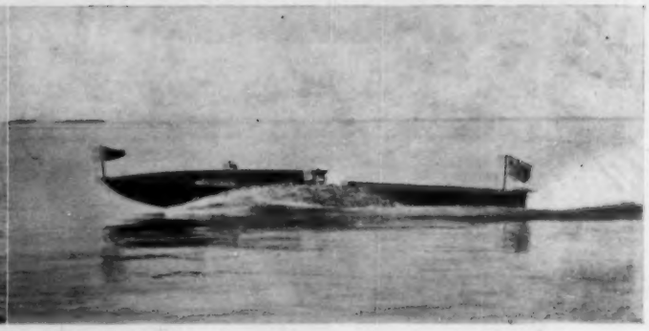


HORNET ON THE CALCASIEU RIVER, IN LOUISIANA

IN BINDING

BESSEMER CUTTING THROUGH A CHESAPEAKE BAY ROLLER.



FAIRBANKS III SPEEDING OFF BALTIMORE YACHT CLUB.

Bessemer vs. Fairbanks III

By PAUL LOCKWOOD

OVER the choppy waters of the Chesapeake, Fairbanks III wrested the championship of the bay from Bessemer in one of the most spectacular motor boat races ever witnessed on local waters. The contest was the second held this year between the two boats, the first one having been won over a seven-mile course by Bessemer. The winning time of Bessemer was fifty-eight seconds, while in the second race over a nine-mile course Fairbanks III passed the judges' stand two minutes before Bessemer finished. The first event was held about the middle of September at the head of the Patapsco River, while the second contest was near the Baltimore Yacht Club's quarters.

Bessemer is the property of Mr. Frederick K. Bennett of the Maryland Steel Company, the corporation which constructed the U. S. S. Worden, which won the recent race down the Atlantic coast of six of the fastest torpedo boats in the United States Navy. Fairbanks III is the property of Mr. A. E. Clarson of the Baltimore Yacht Club.

Both boats had won out in all contests with other boats, and the rivalry which existed between the owners was intense. Big crowds watched each race, and when Fairbanks III was victorious, the shores fairly swarmed with people. Both boats had attained a speed of 25.5 miles an hour under favorable conditions, but at the recent race the average of Fairbanks III was 23.5 miles, the decrease being caused by a heavy wind and the choppy condition of the water.

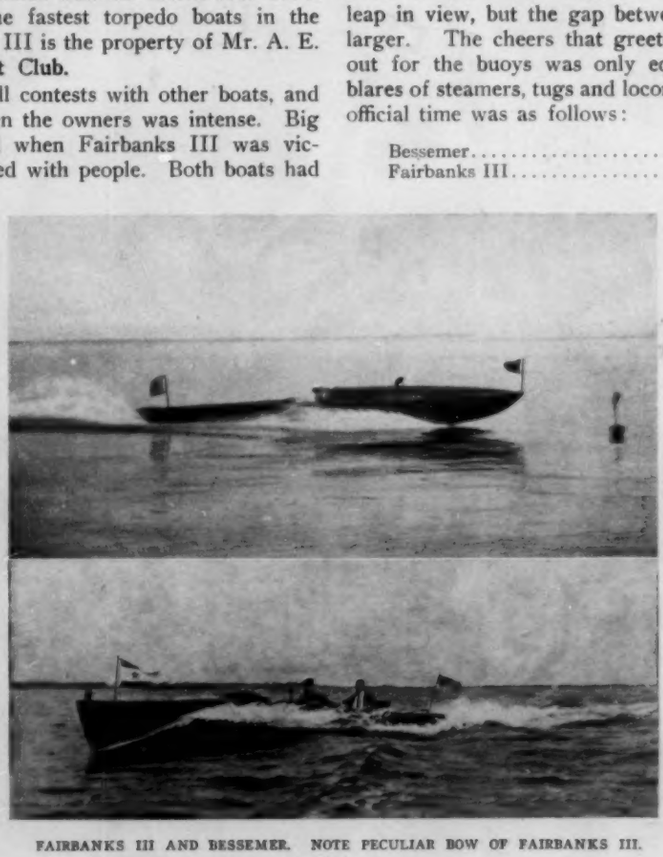
According to the rules governing such contests, Fairbanks III was entitled to a handicap, but refused, on both occasions, to accept such an advantage, and the spectacle of a 15-20 horsepower winning out in a decisive victory over a 25-40 horsepower motor boat is something that is seldom witnessed. The description of the two boats follows:

Fairbanks III.—Length, 29 feet; extreme beam, 4 feet; 15-20 horsepower; Fairbanks engine; cylinders, three, 4½ x 4½ inches.

Bessemer.—Length, 30 feet; extreme beam, 4⅛ feet; 25-40 horsepower; Sterling engine; cylinders, four, 5⅛ x 6 inches. The first race was over a triangular course, from the Sparrows' Point Boat Club to the wreck buoy off Old Road Bay, west to the can buoy marking the Brewerton channel, around this point to White Rocks and return. The five-minute gun was fired from Iolanthe III. The signal was given at 3.41.30, and both boats leaped as the extra power was applied. Choppy waves broke over them as they made direct for the first stake boat. After the turn, with Bessemer in the lead, both boats were lost in the haze off White Rocks, and the excitement on the flag ship was so intense that the decks were wet down several times and the main brace was spliced twice.

Soon a speck of white was seen in the direction of White Rocks, and the glass picked out Bessemer making through a roller on the home stretch. Soon Fairbanks III was seen to leap in view, but the gap between the two was visibly growing larger. The cheers that greeted Bessemer as she straightened out for the buoys was only equalled by the shrill and hoarse blares of steamers, tugs and locomotives at Sparrows' Point. The official time was as follows:

	Start.			Finish.		
	h.	m.	s.	h.	m.	s.
Bessemer	3	41	30	3	59	00
Fairbanks III	3	41	30	3	59	58



FAIRBANKS III AND BESSEMER. NOTE PECULIAR BOW OF FAIRBANKS III.

In the second race Fairbanks III showed her superiority over Bessemer in remarkable style. The course was nine miles, from the Baltimore Yacht Club, thence up Curtis Creek to a small island near the United States Revenue Cutter School, and then back over the same course to the starting point. The official time follows:

	Start.			Finish.		
	h.	m.	s.	h.	m.	s.
Fairbanks III	4	37	00	5	00	30
Bessemer	4	37	00	5	02	30

Fairbanks III was badly leaking as the result of her experience in the mud shoal, while Bessemer was in little better condition. It was the intention of both clubs to hold the third race the following Saturday, but owing to the condition of both boats it was found necessary to postpone that event until next year, when a loving cup will be presented to the winner.

English Yachting

LONDON, November 30, 1907.

APPARENTLY next year in British yachting is to be one of the most interesting we have had for a long time. Sir Thomas Lipton's decision to build a 23-metre yacht for racing round the coast is partly responsible for this, and the donation of a cup for a series of international Corinthian races in 15-metre boats is responsible for the rest. This international race is to take place at Ryde during the Royal Victoria week in August, and yachtsmen are looking forward to it with a great deal of interest. The idea of Corinthian crews does not appeal to me as good, because to get the best out of modern racing yacht, the most expert professional skill is necessary. The race is, of course, part of the Olympian game programme, and professional handling is out of the question, but it is to be hoped, nevertheless, that after the Corinthian races are over, an opportunity will be provided of racing the boats with full professional crews.

I have not heard that any American champion is to be built for this contest, but if one is in the back of anybody's head on your side, I may be permitted to sound just a little warning note. Inside the Isle of Wight, the conditions are not ideally American as both the Barrs will tell you. This difference is not, however, the subject of my warning. What I wish to point out is that in 15-metre boats, not only ourselves, but the French are just as good as Mr. Herreshoff ever was. As a matter of fact, taking a line through Shimna, and this year's Coupe de France, winner, Ahr Men, it will take not only the best boat you can build to win, but the best handling it is possible to find anywhere in the States. Your people will have to take the thing seriously, that is to say, or not at all.

Mr. Fife is both to design and to build the new Shamrock and he has undertaken, I believe, to produce a boat that will beat White Heather II. This is, obviously, a very large order, and the possibility is not remote that he will fail. Taking White Heather II on last year's running I admit that he could produce something that would do better in light ghosting weather. Undoubtedly White Heather II was lucky in her weather this year. There was always plenty of wind, and there always was less than too much sea. These conditions were ideal for White Heather II, and that she liked them better than any others was evident now and then in brief snatches of poor light weather sailing. Next year may bring us light summer weather, and it may not. Moreover, Bevis who has charge of White Heather II is a man who takes pains to learn the lessons of experience, and there is not much reason to doubt that up his sleeve there is something which may improve the light weather qualities of his charge. In that case it is conceivable that the season may end with the balance of victories in favor of the old boat.

In yachting, as in most other things, the human element counts heavily, and the selection of Edward Sycamore as skipper of the new Shamrock is an indication that this is appreciated by Mr. Fife. Bevis could, I believe, have had this boat if he had wanted it, and so could Robert Wringe. But Bevis and Wringe are exceptionally happy in the service of as fine men as ever owned yachts. This is not to say that Sir Thomas Lipton is not also a good yachtsman. The point is that Bevis and Wringe are well satisfied in their present employments, and they would, therefore be extremely foolish to leave them. The only alternative to Bevis and Wringe was, of course, Sycamore, who fortunately for himself and for Sir Thomas Lipton was prospectively disengaged through the decision of Herr Watjen to lay up Navahoe. Sycamore is, as Americans know, a first-rate racing man, and he will without a doubt, take every second out of the boat which Mr. Fife gives him. Of course, he is not any better a racing master than Bevis. Down Southampton way, indeed, they incline to tell you pretty plainly that he is not quite as good. That is a point which I do not care to decide, as both men are close personal friends of mine. The most I may be induced to say is that if Mr. Fife comes anywhere near it with the new boat, there will be some of the keenest racing in British waters next year that we have ever seen. Evidently, too, it is not to be all a duel between the two Fife boats, for the Nicholson cutter Brynhild II, in which there are, obviously, immense possibilities, is to have as sailing master, Stephen Barbrook, whom I mentioned recently as the probable skipper of Mr. Mylne's America Cup challenger when it comes along. Barbrook is a Tollesbury man who was for some seasons associated with the late Tom Jay.

Just after Sycamore had been engaged for the new Shamrock, he accompanied Sir Thomas Lipton and Mr. Fife on a visit to Southampton for the purpose of inspecting White Heather II, and discovering in what respects her design stood in need of improvement. Bevis was, I hear, invited to be one of the party, and he not unnaturally sent a telegram of regret at his inability to be present. Bevis of course is a very good friend of Sycamore. He is also on very good terms with Mr. Fife, but there are limits to the sacrifices which friendship may be expected to make. To ask a man for instance, whom you propose to fight to enumerate all his physical disabilities for your consideration is to ask too much; and speaking right out of the heart as a man who loves fair play, I think Mr. Fife ought not to have expected Bevis to go to Southampton at all.

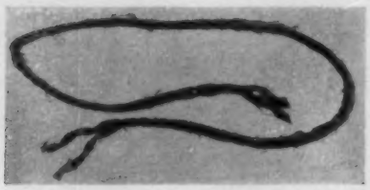
Not much is to be seen in the newspapers here now, regarding Sir Thomas Lipton's differences with the New York Yacht Club, although an occasional crank forces himself on an uninterested public in complaining of the freak in yachting. In the inner circles of the pastime, however, there is considerable discussion of the matter, and the opinion of many yachtsmen, frankly speaking, is that our designers stand in a little fear of Mr. Herreshoff. The matter is one which for obvious reasons, I do not care to discuss. But it seems to me that this shying of Mr. Fife at the America Cup conditions provides a good opportunity for American yachtsmen and American designers to put themselves right with the British public. The British public believes all that is said about their predilections for freak yachts, and delicate construction, simply because few American yachts have been seen racing in British waters. An American representative in next year's 23-metre class would remove this wrong impression. Perhaps two American representatives would be better, because if one only were sent there would always be somebody in the class to look after it. If this were done, I am positive that we should never hear another word about freak yachts, because if there is one thing under Heaven a Briton likes short of victory, it is to see exactly how an opponent defeats him.

Our International Rule is working out pretty satisfactorily in at least one respect. It is binding the yachtsmen of Great Britain together in a way they have never been bound before. In small boat sailing, for example, it is possible now for the owner of a class yacht to race almost anywhere in Europe. True, there is still a great deal of difference between the racing rules of different countries, but before long it seems certain there will be uniformity in this respect also. One is entitled to assume as much, at any rate, from the result of the conference which took place recently in Paris. Many readers may not know what manner of men our Solent yachtsmen are. For their information, I may explain that they are the personages who are specifically referred to in the patriotic line to the effect that "Britannia Rules the Waves." Nobody else counts, afloat or ashore, in Britain or on the Continent. In this conference, they acted on the assumption that the existing British racing rules were the right sort of basis for international racing rules. The rest is easy to guess. Some alterations have been made and several rules have been recast, but substantially, the new international racing rules are almost certain to be the good old British racing rules.

Lloyd's Register takes a great deal of credit in its Annual Report just issued, for the good that the Scantling Rule has done British yachting. It is not for me to deny to so good a naval architect as Mr. Cornish, any honor due to his achievement. Still, I am not to be induced to go back on my previously expressed opinion that to impose scantling rules on racing yachts, is to stay the development of yacht architecture. During the last six weeks, I have heard more complaints in yachting about unnecessarily heavy scantlings than I ever heard in six years in mercantile shipping. And despite what is said by several apparently authoritative people, the complaining is general. Of course, Lloyd's scantlings are too heavy. It is their business to be too heavy. Compare, say, the midship sections of Lusitania and Dreadnought and you will see how unnecessarily heavy they are. Look at the frame spacing of an armored cruiser, and of a merchant vessel of about the same water line length, and you will see the same unnecessary excess. The point that is missed is that the conditions which govern the imposition of scantlings in merchant ships are not to be found in yachting. A racing yacht is built specifically for racing, and in her construction, consequently, every legitimate opportunity should be taken to keep down weight. The genius of a designer is, in fact, almost to be measured by the successful use which he makes of lighter metals. What he saves in hull he can hang on low down in the shape of lead. The advantage of that is obvious enough.

To the non-professional yachtsman, the manner in which weight can be saved is something astonishing. The late George Lennox Watson, for instance, clung tenaciously for many years to the fidded topmast, and it was not until after the fairly satisfactory performance of Shamrock II, that he was convinced of the superiority of a pole mast. By discarding the fidded topmast in the case of that challenger, he saved no less than three-quarters of a ton, sixty feet above the deck. That is an astonishing saving, is it not? And yet it is not the whole of the saving that has been effected aloft. In the second Shamrock, spars, rigging, and sails, represented seventeen tons of the total displacement, while in the second Valkyrie, spars, rigging and sails represented nineteen tons of the total displacement. In eight years, that is to say, Mr. Watson learned how to save two tons aloft. With scantling rules, there will not be any chance of saving like this in the hull. In all probability scantlings have come to stay in yachting, but I have very good reason to believe that when the operation of the existing rule automatically ceases, there will be a considerable lightening of scantlings.

ROBERT MACINTYRE.

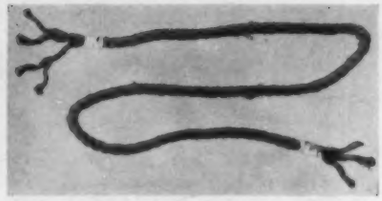


13. 2-YARN TARRED SPUN YARN. A NECESSITY FOR SEIZING.

Rope for Nautical Use

By WILLIAM E. PARTRIDGE

Photographs by Edwin Levick

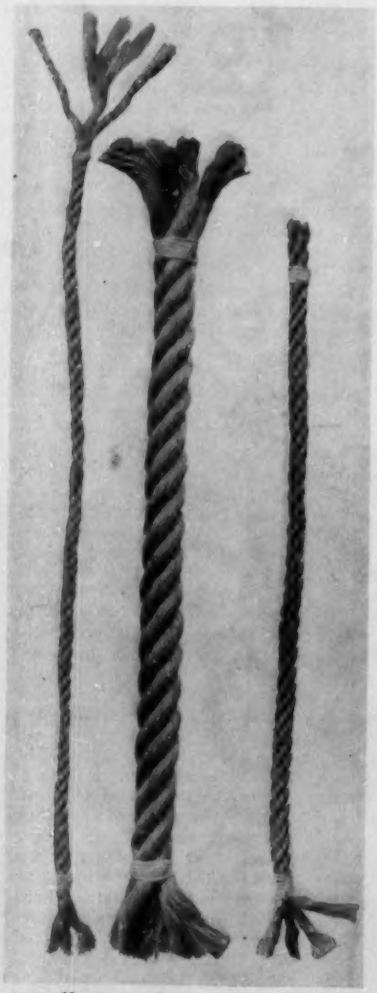


11. HAMBROLINE. TARRED THREE-STRAND HEMP. SIX YARNS.

[EDITOR'S NOTE.—Rope, a word which we use in a generic sense, signifying cordage of all sorts, is a commodity of which the general public knows little. Even the sailor, in whose calling it plays a prominent part, is for the most part ignorant, we daresay, as to the way in which the bundle of flax, hemp, or cotton, or whatever the medium may be, is prepared for use. It is the intention of YACHTING to print a short series of articles showing how rope is made and the divers uses to which it is put aboard ship. Next month the author will take up the subject of knots, of which, as even a landsman knows, there are a bewildering number.]

FROM the earliest ages man has used ropes of some sort. Tendons of animals, thongs of hide, roots of trees, strips of bark, plaited grasses, tough vines and twisted fibres were all employed before history began. Civilized man, as dependent upon ropes as his savage ancestor, still employs in his cordage most of the materials used by the primitive man.

Common usage confines the application of the word "rope" to certain sizes, say three-quarters of an inch in diameter upward to about two inches. Above and below these sizes other names are used. In a wider sense, however, "rope" stands for cordage of all kinds and sizes. It is generic, embracing everything from the finest silk web to the largest hawser.



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22. 3-STRAND MANILA REGULAR 9-THREAD. 4. 4-STRAND MANILA BOLT ROPE WITHOUT HEART. 3. 4-STRAND 3-INCH MANILA BOLT ROPE WITH HEART.

Rope making is one of the oldest of the arts. It belongs with prehistoric things. As far back as history gives us any information, the rope was made in a "rope walk." While one man twisted the strands at one end, another with a bundle of tow, flax or hemp about his body, walked backward paying out the fibres to form a strand or yarn. The curious feature is, that to this day, this is the best way of making a rope. A railway makes it unnecessary to walk backwards. A machine does the twisting and power is applied in various ways. But the best rope is made on the old principle that the strand is laid out straight, and the rope, strand or yarn twisted complete before it is coiled. There are compact rope making machines which twist the yarns, combine three to four strands and at once make them up in coils. A swift but not quite as satisfactory a method as the original. In the Charleston navy yard the government is still making ropes, cables and the like, for use in the navy in the old way, and the rope walk is one of its most interesting features.

Cordage is divided into almost innumerable classes. The sailor is chiefly concerned with a few of the principal ones. Ordinarily he finds Manila, hemp, sisal, cotton and flax ropes in the market. The subject of materials is most interesting but we can spare space for a short outline only. By far the most extensively employed material is Manila. In fact, it is the one fibre employed in all the better kinds of rope. It is universally used for running gear aboard ship. The supply is largely obtained from the Philippine Islands. The fibre is long, ranging from three to ten feet or more and is the product of a plant belonging to the banana family (Musa textilis). It is not only long but has great tensile strength, hence its value in rope making. The color is a pale yellow and in the finer and better grades seems almost white. In a fine piece of rope it has a soft, silky feeling.

Sisal comes to us from Central America and Mexico. It is produced by a kind of century plant, an agave. It is much like Manila but is coarse and harsh in feeling. The color is lighter and has less yellow in it and its strength is much less than that of Manila.

Hemp is the inner bark of the common plant of that name, botanically known as Cannabis sativa. It is a strong, tough fibre of great length. As it is easily injured by water it is usually tarred. Untarred it is considered a little stronger than Manila, but is less pliable and is not as well suited for running rigging. It is also heavier than Manila and so is not as suitable for tow lines.

Cotton is too well known to need more than a word in relation to the fibre. It is one of the Mallow family (Gossypium Herbaceum) and for the finest ropes the famous Sea Island fibre has been found too good. When dry, a cotton rope is soft and pleasant to handle, but when wet is usually hard and stiff. The famous cod line, once exclusively used in cod fishing, is a pretty stiff proposition even when dry. Cotton rope is of most variable quality. The grades reveal themselves even to the inexperienced. At least this is the case where the various grades are seen together.

2 1

2. 3½-INCH REGULAR THREE-STRANDED MANILA ROPE. 1. 6¼-INCH REGULAR MANILA ROPE THREE-STRANDED.

Flax is a fine expensive fibre from the common flax plant (Linum usitatissimum). Its use is largely confined to the smaller threads when the greatest strength is needed and when a fine fibre is essential.

In making first quality goods, the smaller the line the better the quality of the stock must be. Fibres must be longer and stronger than in larger lines. If it is to stand a great strain there can be no short stuff worked in. On the other hand, if the rope is to be larger, short can be utilized, quantity fibres making up for quality.

Those persons who sell rope often make no distinction whatever between hemp and flax, although the latter is a much finer and a more costly material and comes from an entirely different plant.

The fibres as they are first received by the rope maker in bales or

We are indebted to the Marine Manufacturing and Supply Co. of New York for the samples from which our photographs were made and for valuable assistance in the preparation of this article, and also to D. Van Nostrand & Co., 23 Murray St., publishers of nautical and scientific works, for aid and correction in preparing the article.

18. FLAX SEWING TWINE. A SOFT, STRONG THREAD.

16. TARRED LATH YARN. MUCH COARSER THAN NO. 12.

21. MANILA LATH YARN. COMES IN A LARGE LOOSE ROPE.

17. CORSET LACING, FOR WHIPPING, PACKING, ETC.

bundles of various kinds are parallel. The first step in the rope making proper after they have been combed out, etc., is twisting them into yarns. Except for the smaller, finer ropes, or cords, yarns may be said to be of one size. It is true that yarns for very large rope are larger, but the common yarn, which is the basis of all rope, is the same. Thus in figures Nos. 1, 2, 3, 4, 12 and 22 the yarns are alike. The very smallest unit for the finer lines is called by some makers a thread. It differs from the yarn only in size. Both consist of parallel twisted fibres, but the finer the cord, the stronger and better must be the fibre

As yarns are of uniform size and strength we have a convenient method of ascertaining the breaking strength of a rope. Each yarn breaks with about 100 pounds strain. When made up into rope their strength remains the same so that the breaking strength of a rope may be taken in pounds as a hundred times the number of yarns it contains. One of the leading rope-making establishments says that Manila yarns are stronger than this and break at 150 pounds, and that the large yarns for rope about 10 inches in circumference do not break under 200 pounds.

Ropes vary in strength even when new and from the same coil as much as 25 per cent. Manila and tarred hemp have about the same strength.

Yarn is first twisted to the right hand for ordinary rope, that is to say, in the same direction that the hands of a clock move. Now, when two or more twisted yarns are placed together their natural tendency is to twist in the opposite direction. Hence, when yarns are made up into strands the strand is left handed. While this is general there are some exceptions. In figure 5 we have an Italian hemp rope of English make. It is what is called "cable laid." That is, it is made up of three four-stranded right hand twisted ropes. It is a strong, heavy rope used for halyards, lead lines and the like. The hawser is a rope of three strands as in Figure 1. The name is usually applied to the large sizes. Nearly all the ropes illustrated in this article are three-stranded right hand lines.

Ropes of three strands are somewhat rough. There are deep scores between the strands and for many purposes a smoother rope is desirable.

12. TARRED LATH YARN. USUALLY CUT OF SUITABLE LENGTH, AND STRANDS PULLED OUT FOR SEIZINGS.

In such cases four strands are employed. Ropes with four strands are called "shroud laid," probably because in the old days shrouds had four strands. Bolt rope, which should be smooth and pliable, is usually "shroud laid." Figure 4 shows a small piece of bolt rope. It is made up of four strands, each one of which has six yarns. Bolt rope is stronger than ordinary rope since for the same size it has more yarns. Unless a four-stranded rope has a "heart," as it is called, it is liable under heavy strain to be "crippled" by having one strand drawn into the center. To prevent this, a small three-stranded rope is laid in the center of the four strands. (See Figure 3). At the upper end the four strands with the small heart are shown.

Cuts 1, 2 and 22 show different styles of Manila. Of course sizes vary from 9-16 of an inch in circumference, which is called a "line," to cables or hawsers 24 inches in circumference. The tugs which towed the Dewey Dry Dock to the Philippine Islands had 12 coils of 15-inch hawsers, each one 200 fathoms long. Nos. 3 and 4 are Manila, shroud laid, bolt rope. They are soft, flexible and strong. Bolt rope is made from the finest stock and is usually light in color. It is smooth to the hand and gives one an idea of silkiness quite different from sisal and other coarse fibres.

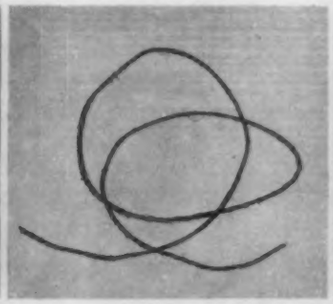
In judging of the quality of Manila, the fineness of the fibres, light color, silkiness of the feeling, flexibility and smoothness of the rope are some of the indications of fine quality.

In No. 5 is an example of a cable laid rope of English manufacture, but the material is Italian hemp. The material is expensive and of great strength and length of fibre and very fine. Hence, ropes of this kind are too costly for common use. They are chiefly used for signal halyards, lead lines and in which strength is of great importance.

No. 6 is called Italian rope. It is hemp untarred and has six yarns and three strands. It is a soft rope, light gray in color, and pliable.

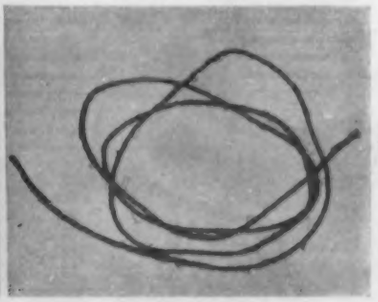
No. 7, cotton, is not like any other rope. Its yarns are small and of fine fibre, finer than the finest hair. Although the longest Sea Island cotton gives fibres of only five or six inches in length, the rope is strong. It is made in a great variety of sizes. It is pleasant to the hands, lasts

20. 2-YARN SISAL MARLIN.



15. YACHT MARLIN TARRED.

19. MANILA MARLIN.

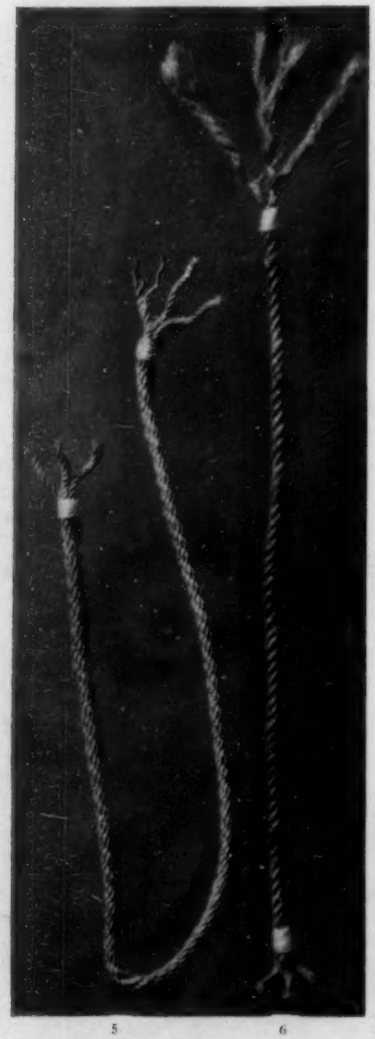


14. REGULAR MARLIN TARRED.

well and from the character of the strands is useful for ash hoists and the like.

No. 4, cotton braided rope is made in sizes from a quarter inch in diameter and upward. It has a center of straight threads and so does not kink and twist like ordinary laid ropes. The sailors' objection to it is that it can't be spliced, nor does it yield to any of the operations performed upon twisted ropes. If an eye is to be turned in it the end must be secured by a seizing or whipping. Its smooth round surface makes it valuable in many places. It is extremely hard as compared with Manila.

9. LANYARD ROPE OR 32-THREAD RATLIN. 4 STRANDS 2¼ INCHES IN CIRCUMFERENCE. RATLIN IS MADE IN 6, 9, 12, 15, 18, 21, 24 AND 32 THREAD, WHICH IS THE LARGEST SIZE. TARRED HEMP. ABOVE 21 THREAD IT BECOMES LANYARD ROPE.



5 6

5. CABLE-LAID ITALIAN HEMP (ENGLISH MADE). 6. "ITALIAN" ROPE HEMP. A SOFT, STRONG ROPE.

No. 9. Lanyard Rope. This is a four-strand tarred hemp rope without a heart. It is of thirty-two yarns and is classed by some as the largest size of "ratlin stuff."

No. 10 is eighteen-thread ratlin. It is made in 6-, 9-, 12-, 15-, 18- and 21-thread sizes. In larger sizes it becomes Lanyard Rope.

No. 11, hambroline, is a tarred three-strand, six-yarn hemp, right handed and about ⅞ of an inch in circumference.

No. 12, tarred lath yarn, is made up into a sort of loose strand or rope and comes in coils. It is cut off into suitable lengths and then the yarns are drawn out one by one as they are wanted. The yarns are made in several sizes.

No. 13, two-yarn tarred spun yarn is one of the necessities for seizing on board vessels.

No. 14 is regular marlin and No. 15 is yacht marlin. The difference between the two is very marked even in the engraving. Each is made up of two threads but the yacht marlin is of finer material with long fibre, smooth, and with few projecting hairs.

No. 16. Tarred lath yarn. A large stout quality of coarse stock.

No. 17. Corset lacing. A flat braided cotton line much used for packing condenser tubes, whipping the ends of ropes and for other purposes when a soft but strong small line is wanted.

No. 18. Flax sewing twine. A soft strong thread of three parts, so small that they can hardly be called yarns.

No. 19. Manila marlin, not tarred.

No. 20. Two-yarn sisal. The coarse character of the fibre shows plainly when compared with the Manila marlin, No. 19.

No. 21. Manila lath yarns, untarred. This comes in a loose rope and is used in the same way as the other Latch Yarns.

No. 22. Three-strand or nine-thread Manila regular, untarred.

In making the photographs for the engravings, each sample of rope has been opened at one end so as to show the strands themselves. At the other end one of the strands has been opened and spread out so that the yarns can be seen. No attempt has been made to show all the sizes since these vary from the smallest fish line to a cable or hawser eight or ten inches in diameter.

Wear in exposed positions and heavy strains both reduce the sizes of ropes with great rapidity, and, at the same time reduce their strength. One or two heavy pulls above what the rope ought to bear may easily take half its strength.

The measurement of rope puzzles many people, and the question is frequently asked why not take the diameter as the measure of size. For an answer let the questioner take a piece of large three-strand rope and try to find its diameter. Such a rope as that shown in figure 1, for example. Unless he has a pair of calipers made for the purpose he may call it 1- or 1⅛-inch. With a bit of string he at once gets 6¼ inches without chance for mistake. It is for that reason that the circumference is always taken.

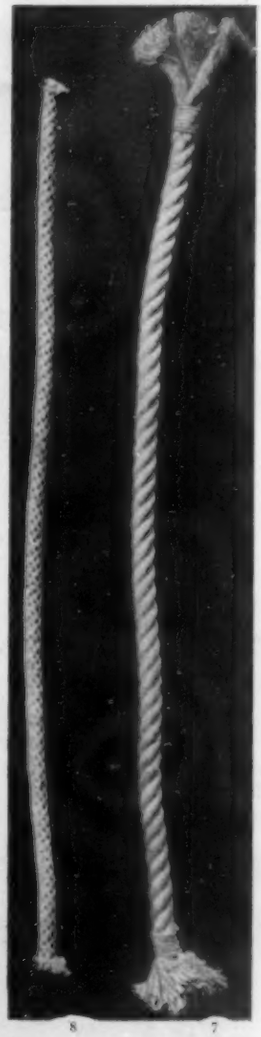
While we have not told the whole story of the cordage we have given the reader sufficient information to at least enable him to recognize the difference between the coils of first class Manila and the poorer qualities when he enters a ship-chandler's. And he will not wonder, when he sees a coil of lath yarn, whether that is a peculiarly poor quality of rope. In one's ordinary work about a boat, the sizes and kinds of rope used will not amount to more than half a dozen, and these have been covered in our descriptions.

Once upon a time a marine artist painted a picture of the deck scene of a full rigged ship. This artist was a man of deep nautical knowledge and the ships that he painted were always regarded as true to life as any real vessel. A certain art dealer placed this picture in his window and attached a card offering a reward for anyone, sailor or landsman, who could detect the slightest flaw in the craft. Many came to look at the picture, among them not a few sailormen who studied the painting with all the care born of a desire to win the reward. But not a defect could they find. A week went by, and it was about decided to take in the painting when one morning into the store walked a teamster who at one time had been a foremast hand on an American square rigger.

"You kin give me that $10," he said.

"Eh? Well, you must state your reasons, you know," exclaimed the astonished dealer.

10. 18-THREAD RATLIN TARRED HEMP.



8 7

7. COTTON ROPE 3 STRANDS. VERY SMALL, FINE YARN. 8. A COTTON BRAIDED ROPE. A STRONG, DURABLE, BUT SOMEWHAT UNMANAGEABLE ROPE.

"That coil of line on the deck ain't coiled with the sun," was the reply.

And neither it was, the coil was away from the sun, a serious breach where the captain is a martinet. The reward was paid.

How to Design and Build a Dinghy

By JOHN A. CONNOLLY, JR.

THE most popular style of yacht racing to-day is that of the one-design class. It has been the means of opening up to all the members of the numerous yacht clubs throughout the country, a field that is cheap to build in, eliminating special designs and calling forth from the owner of such craft, ingenuity and ability to win out.

In a recent visit to Toronto, I spent much time in sailing Toronto Bay in a craft that is vastly popular in that locality and of which there are no less than eighty within the Bay. This is the Toronto Bay racing dinghy, a craft 14 feet long on deck, with a beam of not less than 5 feet nor more than 5 feet 7½ inches and a maximum sail area, per rule, of 140 feet, carried either in a gaff or a spritsail, the rig being of only one sail.

Rules and regulations govern the class and the area of the largest vertical cross section must not be less than 875 square inches. The boats are lap-streak in build, carvel not being allowed, and the crew must consist of two men, no more, no less. The planking allowed must be ⅜ inch in thickness with lands not less than half such thickness and the minimum size of frames, is ¾ by 1 inch spaced 12 inches, center to center.

This class, if introduced in the respective clubs throughout the country, could not be other than popular. The boats are fast, able and seaworthy, can be built for a small outlay of money and in a short time. It is such a class as this I would like to see introduced among all the yacht clubs throughout the world.

This article contains the Lines, Construction, Sail and Set-up plans, also a Table of Offsets, a detailed Specification and a description of how to lay down and build such a craft. I have named the craft "Ripple."

Her dimensions are as follows—Length on deck, 14 feet; length on load water line, 13 feet 6 inches; beam on deck, 5 feet 6 inches; draft of hull, 4 inches; draft to bottom of skeg, 6 inches; displacement, 495 pounds.

SPECIFICATION:

STEM—Spruce, 2 inches thick.

KEEL—Spruce, 6 inches wide in middle and 1 inch thick tapering to 2 inches wide on forward end and 4 inches wide on after end. To be worked out as shown on construction plan with a back rabbet on each side.

STERN-KNEE—Spruce, 2 inches thick, made as shown on construction plan.

STERN—Spruce, ¾ inch thick.

FRAMES—Oak, ¾ by ¾ inch spaced 9 inches center to center, full length, gunwhale to gunwhale setting on top of keel.

FLOORS—Oak, ½ inch thick in depth from 1½ inches above keel to inside of planking, jogging over keel and fitting tight to plank and at least 2 feet long.

CLAMPS—Spruce, ¾ by 2 inches.

STRINGERS—Same as Clamps.

DECK BEAMS—Spruce, ½ by 1¼ inches, one on each frame. Nos. 2, 5, 15 and 17 to be of oak ¾ by 1¼ inches.

CHAMPION DINGHY, NATIONAL YACHT AND SKIFF CLUB.

SILL—Spruce, ⅜ by 2 inches running from Nos. 5 to 16.

COAMING—Oak, ⅜ by 3⅜ inches as shown in construction plan. To set 2 inches above deck.

PLANKING—White cedar, ⅜ inch thick put on in 12 planks on each side, lap ¾ inch, lands 3-32 inch. For width of each plank on midship frame or No. 10 (near Station 3), see construction plan.

DECK—Cedar or white pine, ¼ inch thick and covered with canvas, laid in paint.

CENTERBOARD TRUNK—Spruce, ¾ inch thick in two widths. Uprights, oak, 1¼ by 1½ inches.

CENTERBOARD—Oak, made of ⅝ inch thick material and as shown in construction plan.

KNEES—The following knees are to be used. Two at deck beam, No. 2, 6 inch arms ¾ inch thick; two at stern corners, ¾ inch thick 6 or 9-inch arms; three on each side of trunk in lieu of floors, ¾ inch thick, upper arm 6 inches, lower arm 10 inches. All to be of oak.

BULKHEADS—Cedar or spruce, ⅜ inch thick.

SKEG AND RUDDER—Made as shown on construction plan.

FASTENING—Thorough throughout, and planking to be fastened to frames with copper rivets and copper tacks between frames.

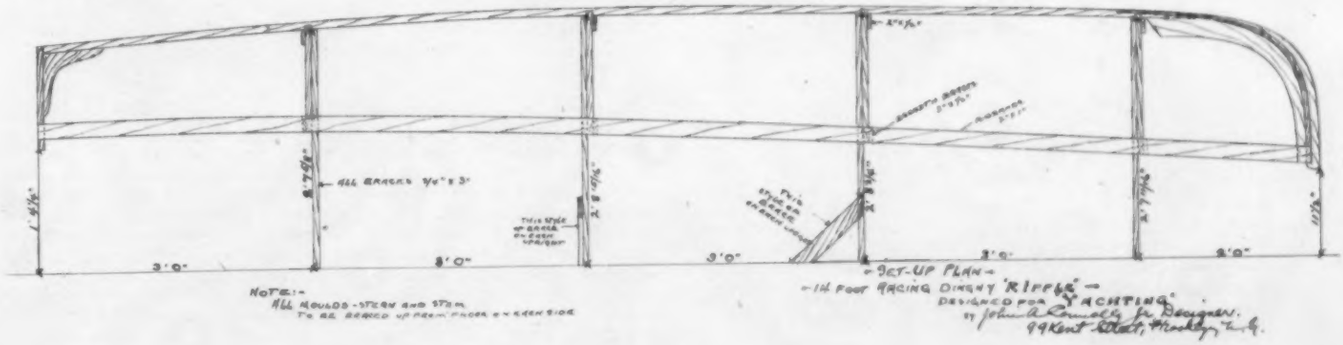
FINISH—Bright on hull with a good spar varnish; on deck, painted a dull brown or gray.

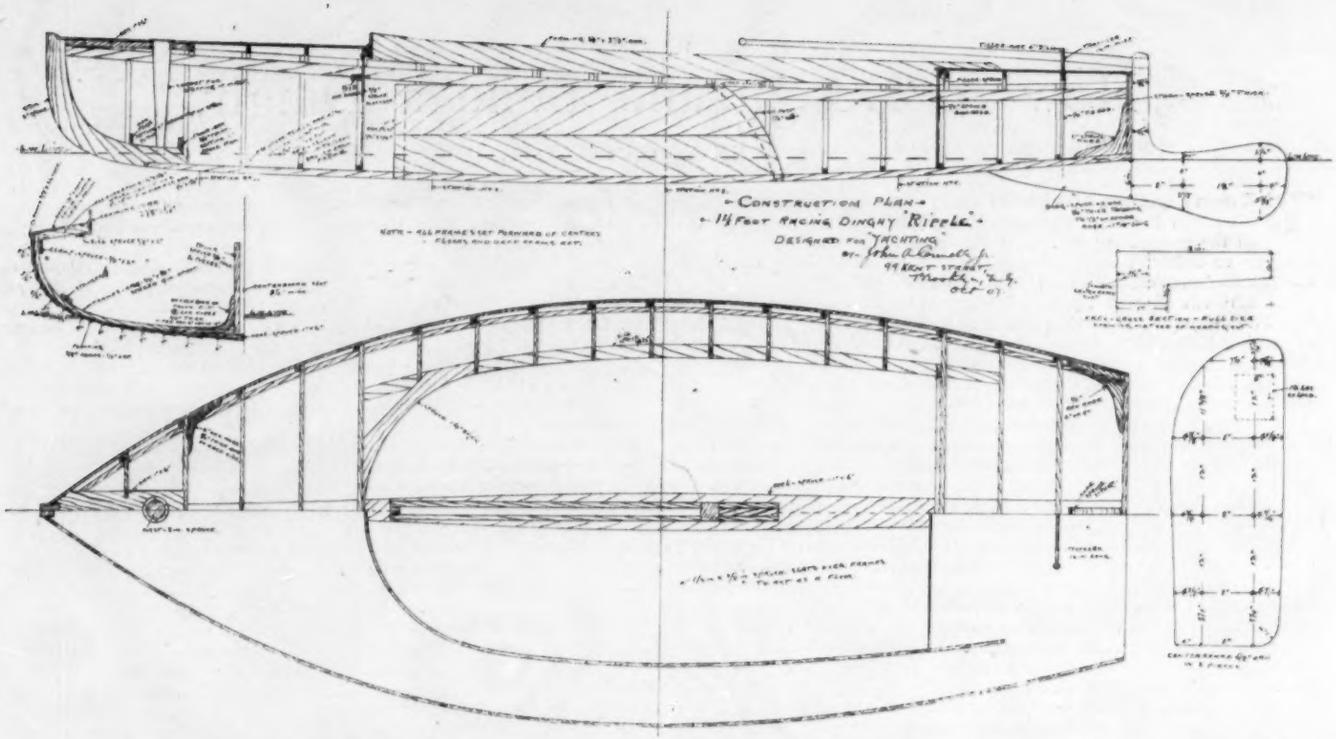
IN GENERAL—Sail, rigging, blocks, mast, boom and gaff to be made as called for on sail plan. Boat has no seat or floor in construction plan, but 1½ by ⅝-inch slats of spruce are recommended instead to set on top of frames.

COST OF MATERIAL, ETC.

The material necessary and the cost to build one of these little racers would be approximately as follows:

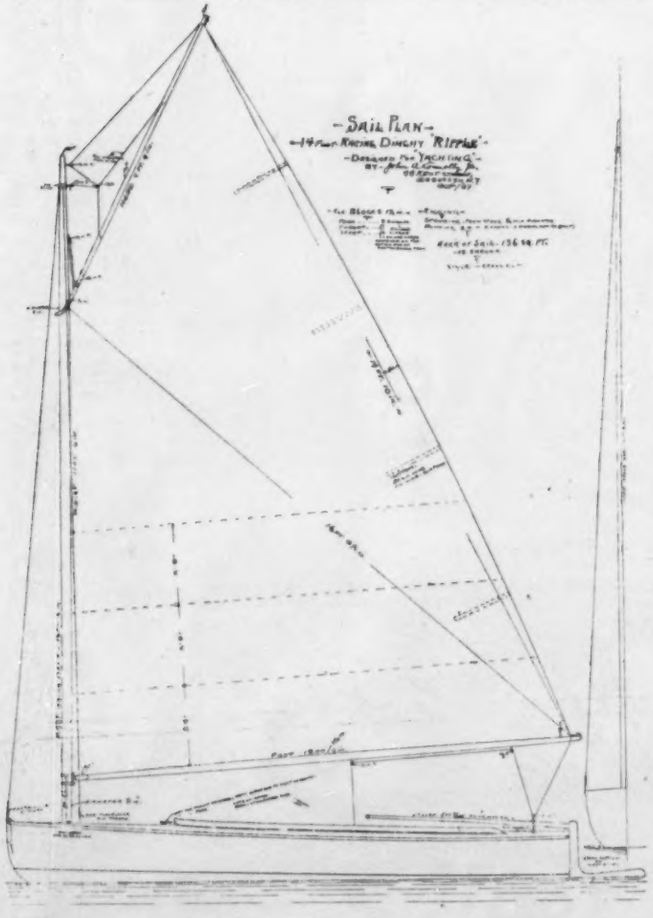
MATERIAL.	COST.
Keel, spruce, 1" x 6" x 13'	$0.35
Stem, spruce, 2" x 12" x 3'	.30
Stern, spruce, ¾" x 14" x 4'	.25
Frames, oak, one board, 1" x 10" x 14'	1.15
Planking, cedar, 6 planks 1" x 10" x 12'	3.60
Deck Beams, spruce, 1 board ½" x 12" x 6'	.30
Deck Beams, oak, 1 piece ¾" x 8" x 5'	.35
Coaming, oak, ⅜" x 6" x 19'	.65
Centerboard Trunk, spruce, ¾" x 8" x 20'	.80
Centerboard, oak, ⅝" x 10" x 8'	.65
Knees, oak	.50
Fastening, Copper Rivets and Tacks, etc	3.10
Sail, Spars, Rigging Blocks, etc.	15.00
Incidentals, painting and varnishing, etc.	5.00
	$32.00





LAYING DOWN OF LINES.

Before describing the first process, that of laying down the lines, it will be best to tell you just what will be necessary to start with. You will need a hammer, some 1½ inch wire nails, a pound will be enough; a crosscut and a rip saw, a medium size plane, a shoemaker's awl, a batton about 16 feet long, 1 inch wide and ½ inch thick; a thin batton 4 feet long, ¼ inch wide and ⅛ inch thick; a piece of chalk and a fish line about 20 feet long.



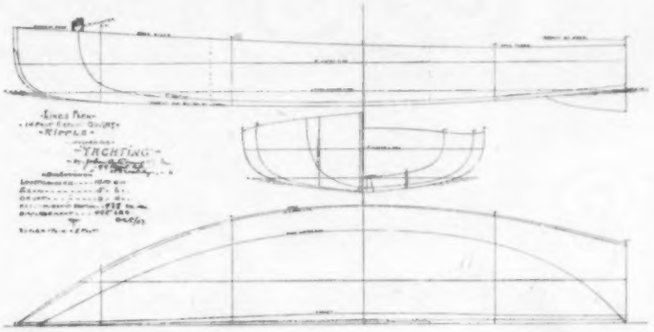
After selecting the floor space where you will lay boat down, sweep it clean and run in your base line with the 20-foot fish line (which has been chalked thoroughly) by snapping it above the floor a couple of times. On the left end of this base line strike up at right angles to it your stem line. Next measure off along base line two feet to the right and this will be Station No. 1; No. 2 will be three feet to the right of No. 1; No. 3, three feet to the right of No. 2; No. 4, three feet to the right of No. 3, and the stern line will be three feet to the right of No. 4. Strike in these upright lines parallel to the stem line. Next run in your load water line which sets up 6 inches above your base line, and the water line which sets up 8 inches above load water line. You are now ready to run in your deck line. Before doing so it is best to tack to the bottom side of base line a batton for measuring distances above it on the Station lines. All measurements given are to the outside of planking. Run in your deck line with the 16-foot batton and fair it up true. The sheer line and the water lines can go through the same process. Measurements for the outside of stem, rabbet and bearding can be procured from the Table of Offsets. After all these lines are run in, select a space for your body plan and transfer measurements of deck, sheer water lines and section lines thereon from Stations Nos. 1, 2, 3, 4 and stern. After you have done this, run in the shape given by these points, deduct the thickness of plank and you have the shapes for the moulds and stern necessary to build with. The next process in order is to get out a pattern for the stem and the keel, after which you can make your stern and keel out of the material specified. For the widths of keel at different stations, stem and stern see Table of Offsets.

SETTING UP.

Now proceed to set boat up for building. Fasten the stem and stern to the keel. Set the moulds up in place as shown in the Set Up plan after which put your keel in place by bending it over the moulds. Fasten it in place as shown on this plan, bracing thoroughly also, all the moulds.

It is unnecessary for me to go deeply into the process of planking for most every amateur is familiar with the process. It is always best to have a professional builder or a clever amateur assist you, thus insuring success. After all the planks are on and thoroughly fastened in place and as specified, turn boat over and set up, right side up, bracing it thoroughly in place. For the frames, take the 14-foot oak board quoted in the list of materials, etc., and have it sawed into 1-inch strips, after which have strips planed down on all sides to ¾ by ¾ inches. Remember to get green oak for your frames to insure easy bending. All frames are to be put in, in one length from gunwhale to gunwhale, and spaced 9 inches center to center, of course, excepting those well up in the bow. A small steam box can be readily set up to meet one's wants and in steaming the frames 20 to 30 minutes will be sufficient if the oak used is good and green. Fasten frames in thoroughly after which you can

place in all the floors excepting the ones along side of centerboard trunk. Fit all these floors to inside of plank, jogging them over the top of keel. You can now remove the moulds, not forgetting to place a brace at each station to hold boat to width of mould removed. Next place your bilge stringers and clamps in place, fastening them in thoroughly. Work your deck beams out of material quoted in description, after which you



can proceed to deck boat and place coaming in proper position, of course stretching canvas deck in place before doing so. Before putting on deck it would be best to set the forward and aft bulkhead in place (see Construction Plan). Before you put coaming in place, cut out the centerboard slot and put trunk in its proper place bracing it on each side with three knees as specified.

TABLE OF OFFSETS
17 FOOT RACING DINGHY "RIPPLE"
DESIGNED FOR "YACHTING"
BY - John A Connelly Jr.
99 Kent St Brooklyn, NY
Oct 10 / 07.

HALF BREADTHS	STEM	STATION NO. 1	STATION NO. 2	STATION NO. 3	STATION NO. 4	STERN
DECK -	0.0.0	1.3.8	2.6.1	2.9.0	2.6.0	1.10.0
R. WATER LINE -	0.0.0	1.2.6	2.5.0	2.8.6	2.5.6	1.9.5
LOAD WATER LINE	0.0.1	0.8.1	1.10.2	2.1.6	1.10.6	0.1.0
HEELS -	0.0.1	0.0.1	0.1.0	0.1.0	0.1.0	0.1.0
WIDTH OF KEEL	0.1.0	0.1.0	0.1.1	0.1.0	0.1.1	0.1.0

HEIGHTS -	STEM	NO. 1	NO. 2	NO. 3	NO. 4	STERN
SHEER	2.0.0	1.10.6	1.8.6	1.6.7	1.6.0	1.6.5
INTERSECTION		0.8.6	0.9.6	0.9.1	0.9.1	0.7.6
BOTTOM OF KEEL		0.7.1	0.3.1	0.3.0	0.2.1	0.4.0

ALL MEASUREMENTS IN FEET, INCHES AND EIGHTHS.

OFFSETS OF STEM, RABBET AND BEARDING, MEASURED OUT ON DECK, R. WATER LINE AND LOAD WATER LINE FROM STATION NO. 1

	OUT SIDE OF STEM	RABBET	BEARDING
DECK	2.0.0	1.11.4	1.8.4
R. WATER LINE	1.10.6	1.10.3	1.8.6
LOAD WATER LINE	1.10.1	1.9.6	1.3.6

1/2 SIP SECTION SETS 1 FOOT OUT FROM CENTER.
LOAD WATER LINE SETS 6 IN. ABOVE BASE LINE.
" " " " 8 " " LOAD WATER LINE.
STATION NO. 1 IS SQUARE OUT ON STEM.
ALL OTHER STATIONS SQUARE ABAFT.
STERN IS SQUARE OUT ON STATION NO. 4.
ALL MEASUREMENTS TO OUTSIDE OF PLANK EXCEPTING OF COURSE THOSE FOR OUTSIDE OF STEM, RABBAT AND BEARDING, WHICH ARE RETURNED, AS IS ALSO WIDTH OF KEEL AND HEEL.

You need only now to make your centerboard and get out your spars. The sail, rigging and blocks, we may presume, have been ordered. It is only a question of finishing up and placing on skeg, chafing pieces, the mast socket, cleats and rudder made as specified, and you are ready for a spin in one of the finest little craft of her size.

This type of craft is so economical, both to build and maintain, it may be laid up in winter in such small space and requires so little time in Spring to put in commission that dinghy clubs could be formed all over the country and the sport of dinghy racing enjoyed by those who want something with more carrying capacity than a canoe, but something which is smaller than the regulation cat boat.

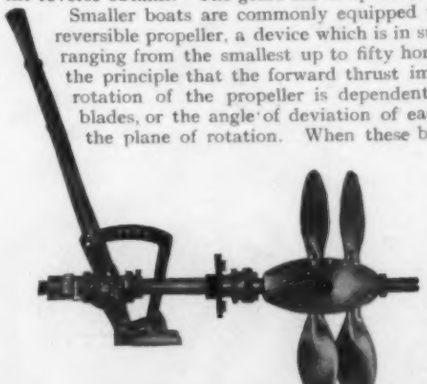
The Practical Side of Motor Boating

REVERSING MECHANISM AND METHODS

By HOWARD GREENE

A DISCONNECTING device between the motor and the propeller wheel is necessary on all motor boats, except those of the smallest size, in order to facilitate making landings and to enable the motor to be easily started by disconnecting the load. There are two broad types of such devices in use and like many other appliances each has its advantages and its disadvantages, making it somewhat difficult for the novice to select the one best suited to his individual needs. Practically, all high-powered motor boats use a friction clutch and gears for disconnecting and reversing, the clutch being much like that used in automobile practice. The clutch and gears are manipulated by a single lever. A central position of this lever permits the engine to rotate without imparting motion to the propeller shaft; a forward position drives the propeller in the go-ahead direction, making what is to all intents and purposes a solid connection; and when the lever is pushed backward the reverse obtains. The gears are in operation only when reversing.

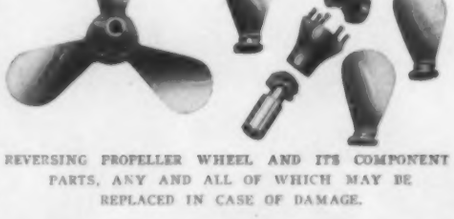
Smaller boats are commonly equipped with what is known as a reversible propeller, a device which is in successful use with motors ranging from the smallest up to fifty horsepower. This works on the principle that the forward thrust imparted to a boat by the rotation of the propeller is dependent upon the pitch of the blades, or the angle of deviation of each individual blade from the plane of rotation. When these blades are at their most efficient pitch the thrust of their rear surfaces against the water is maximum, and when this pitch is reduced and the angle made smaller, the thrust is correspondingly decreased. When the blades are so turned that the faces of the blades are parallel to the plane of rotation—or, in other words, when the blades move edgewise through the water—there is no thrust and no propulsive force imparted to the boat. When the blades are turned still further, so that they slant in the opposite direction to their former "go-ahead" position, the forward faces work against the water, tending to propel the boat astern.



REVERSIBLE PROPELLER. THE POSITION OF THE BLADES, WHICH IS CHANGED AT WILL BY THE LEVER, GOVERNS THE SPEED AND DIRECTION OF THE BOAT, FROM FULL SPEED AHEAD TO FULL SPEED ASTERN. A FEATURE OF THIS PROPELLER IS THAT, WHEN SET AT NEUTRAL, THE BLADES COUNTERACT EACH OTHER, THUS KEEPING THE SAME LOAD ON THE ENGINE, PREVENTING RACING.

Propeller blades operating on this system are specially designed and are individually pivoted in a hub, the mechanism of which is connected with the reversing lever by means of a brass sleeve sliding over and rotating with the shaft, or by a rod passing through the propeller shaft, which in that case is made hollow for the purpose. It will be observed that this arrangement permits of a permanent connection between the engine and propeller shafts and allows the continuous rotation of the propeller and shaft while the boat may be moving ahead, astern or not moving at all. A lever moving over a notched quadrant usually serves to regulate the pitch of the blades.

The most efficient combination of engine, shaft and wheel is one in which the propeller is cast in one piece and rigidly secured to the shaft, which in turn is positively connected with the engine shaft, as is the case in all steam-driven boats. This necessitates a reversing engine, however, to drive the boat astern. But as a reverse is absolutely necessary on all but very small boats, and as very few gasolene engines can be depended upon to reverse promptly, or at all, in case of emergency, there is no alternative but to use one of the reversing systems referred to. The friction clutch and inside reversing gear has the advantage that it permits the use of a solid propeller and eliminates the rods, sleeves and connections necessary with the reversing wheel. By the use of a solid wheel slightly greater speed can be obtained from the same power owing to the smaller hub, which permits a larger surface of blade for a given diameter of wheel. With a solid wheel and inside reversing gear only one stuffing-box is required, while with the reversible wheel two are necessary.



REVERSING PROPELLER WHEEL AND ITS COMPONENT PARTS, ANY AND ALL OF WHICH MAY BE REPLACED IN CASE OF DAMAGE.

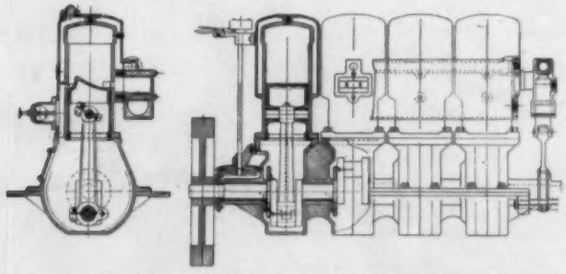
On the other hand, the reversible propeller permits its shaft and that of the engine to be solidly coupled together and so eliminates slipping. The friction clutch requires a certain amount of care and attention and the reverse pinions sometimes give trouble. Lubrication must also be

carefully watched. If one blade of a reversible propeller is broken it can be replaced; with the solid type an entire wheel must be substituted. This is a matter of some importance when cruising in unknown waters where there are, perhaps, floating obstructions, or where the "bottom is near the top." The ability to change the pitch of the propeller blades at will is a decided advantage, for if the throttle is operated in conjunction with the reverse lever the speed of the motor may be kept constant, regardless of the speed of the boat through the water, and every variation of power in either direction, ahead or astern, may be obtained. Another point is that not infrequently the pitch of the blades that gives the utmost speed will cause a certain amount of jarring and vibration, which can be eliminated by slightly altering the pitch and obtaining steadiness and smoothness of running at a slight sacrifice of speed.

In case of emergency, when it is necessary to stop the boat suddenly, either system will answer the purpose equally well, though it is probable that the wear and tear of the reversible propeller would be less than that of the inside gear and clutch system. Landings can be made with equal facility with either type, though the fact that the continuous revolving of the propeller has a tendency to swing the boat is apt to be confusing to the novice who does not know how to take advantage of this propensity of his craft. With either system it is advisable to throttle the engine before throwing out the clutch or bringing the propeller blades on the center, as the case may be, to prevent the motor from racing when the load is suddenly taken off. Reversible propellers are very commonly used in the smaller boats and these are in very many instances operated by novices who find it difficult to get the knack of handling their craft properly owing to the peculiarities of the reversing apparatus. Therefore a few words on making landings will not be out of place.

INTERIOR, SIDE AND FRONT VIEWS OF A REVERSING CLUTCH, BY MEANS OF WHICH A SOLID WHEEL MAY HAVE ITS MOTION REVERSED OR STOPPED ENTIRELY, WITHOUT CHANGING SPEED OR DIRECTION OF THE REVOLUTION OF THE ENGINE.

The propensity of a beginner to approach a landing, bow on, at full speed and then throw his blades suddenly into the reverse position and keep his boat yawing violently until he comes within boat-hook distance of the landing is not only conducive to a strained engine and reverse gear, but usually insures a poor landing and, some day, most likely there will be a stove-in hull. With the engine racing at top speed and the propeller in neutral position, revolving rapidly in a current of water moving toward the stern of the boat caused by the previous forward pitch of the blades, it is well-nigh impossible to keep the bow headed for any particular



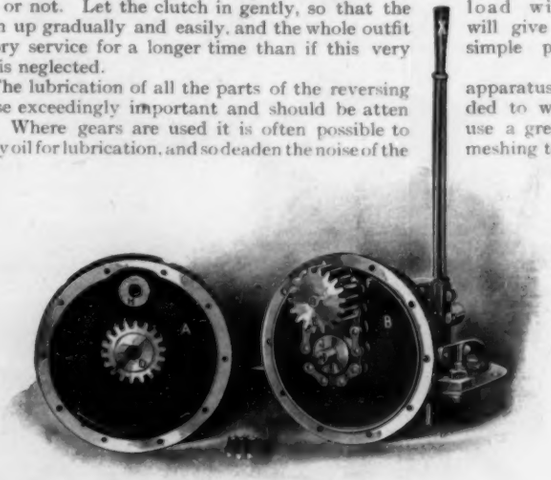
A REVERSIBLE ENGINE. THIS ENGINE REQUIRES NO REVERSING GEAR ON SHAFT OR WHEEL.

point, and a stern-on landing is about as likely as any other. In fact, it is a pretty safe conclusion that the landing made will be very different from what was intended. If, however the engine is first slowed down while still at some distance from the landing place, and thereafter kept at a moderate speed by throttling or spark retarding as the pitch of the blades is reduced, the tendency of the boat to swing when the propeller is reversed can be made a help to a good landing rather than a hindrance. A good method is to approach the pier or wharf at an angle of 30 to 45 degrees, with the engine well throttled and the blades only a few notches forward of neutral—giving merely sufficient power for steerageway—and then, at the proper moment, first turn the rudder and then bring the propeller blades to neutral position so that the boat will swing parallel to the pier. Much better results can be obtained in this way than by bringing the blades to neutral position before the rudder is turned, as one would work against the other and make the direction of the boat very uncertain. In case the neutral position of the blades does not retard the boat sufficiently, a few notches in the reverse will bring about the desired result. If the boat should be parallel to the pier when it is found necessary to reverse the propeller, the rudder should be turned in the opposite direction, or toward the pier, so as to offset the tendency to swing. Of course it is always advisable when making a landing where there is a heavy sea or a swift current to head against the current or into the wind, so that the force of the water will assist in checking the motion of the boat.

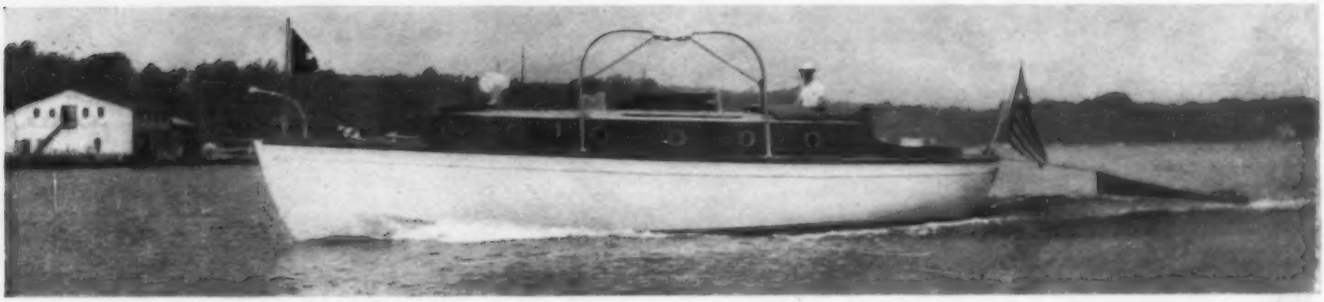
No two boats will handle just alike, and therefore it is not possible to give any idea of the distances at which the various changes should be made. But by following the foregoing general directions and using a good deal of caution, safe landings should be made, and by practice really smart work can be done without damage to the boat, engine or the skipper's feelings. It is necessary, first of all, to know the boat and engine thoroughly—just how they will act under given conditions of wind and water—so that unexpected conditions can be met as soon as they arise

Whatever type of reversing gear is used, it should be handled with a reasonable amount of care in order to avoid unnecessary wear and tear and to obviate the possibility of a sudden breakage through the abnormal straining of the parts. For instance, if the engine is running fast, say at its normal speed—with the propeller disconnected, and the clutch is suddenly engaged, there will obviously be a sudden wrenching, twisting stress on the gear, the propeller, shaft and parts and, last but not least, the engine itself. To be sure, launchmen often ignore the necessity for caution in this direction and nothing seems to happen; but there is just that much extra wear imposed on the whole system, whether it appears at once or not. Let the clutch in gently, so that the load will be taken up gradually and easily, and the whole outfit will give satisfactory service for a longer time than if this very simple precaution is neglected.

The lubrication of all the parts of the reversing apparatus is of course exceedingly important and should be attended to without fail. Where gears are used it is often possible to use a grease or heavy oil for lubrication, and so deaden the noise of the meshing teeth.



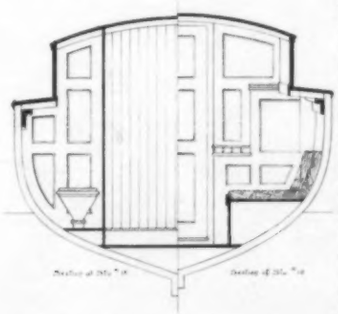
INTERIOR VIEW OF ANOTHER FORM OF REVERSING GEAR. NOTE THE CHAIN ACTUATED MECHANISM.



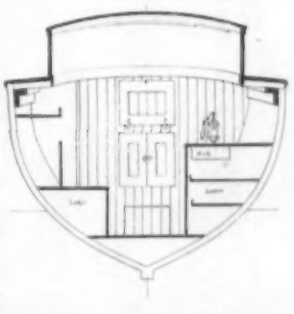
ZENDA, A TRUNK CABIN CRUISER WITH PLENTY OF STOWAGE SPACE.

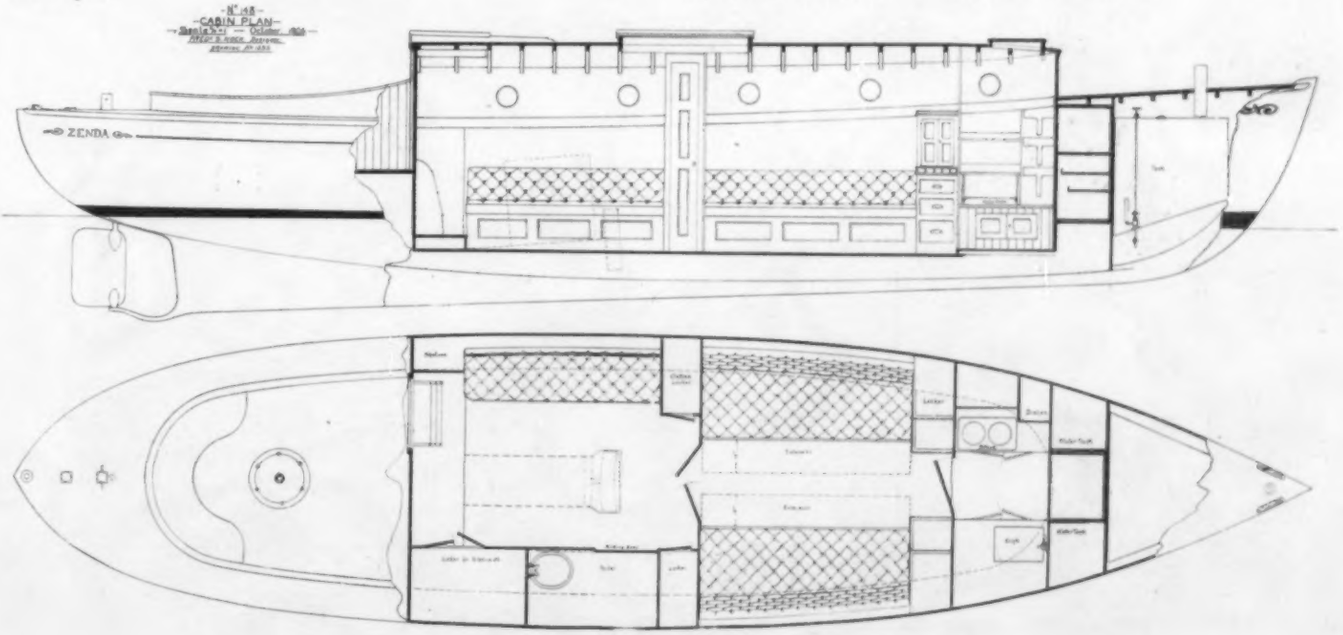
Forty-Foot Trunk Cabin Cruiser, Zenda

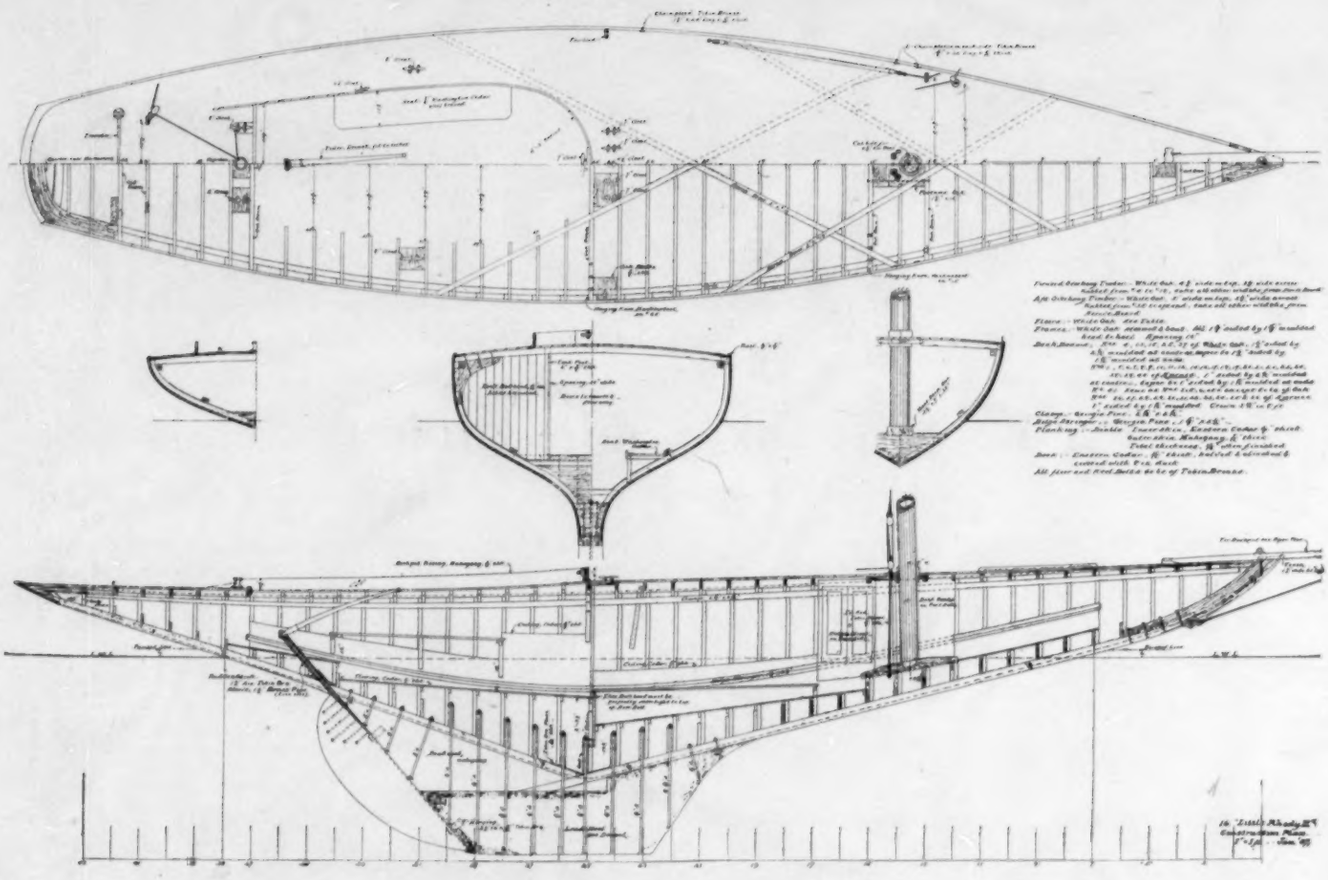
ZENDA is from the board of Frederic S. Nock. She is 40 feet in length over all, 9 feet beam and draws 3 feet of water. Her engine is 18 horsepower and puts her through the water at from ten to eleven miles per hour. She has a very long cabin trunk, to which, in fact, her cockpit room has been somewhat sacrificed. But she has been so well provided with locker and stowage that her housing accommodations go far to counteract this one deficiency. Her gasolene tank is in the bow and isolated by a watertight bulkhead. Immediately aft of the tank, and under the forward deck, she carries two water tanks, one on each side. Between them is her refrigerator, to which access is had by means of doors in the forward galley bulkhead. Underneath the forward part of the cabin trunk, and therefore possessed of plenty of head room and ventilation, is the galley, provided with a double burner Khotal stove, sink, refrigerator and dish lockers. Every available bit of the galley not actually occupied by stove or sink is devoted to shelf space.



A door in the bulkhead, aft of the galley, gives access to the main cabin. There are lockers on each side of the forward end of this stateroom, which is equipped with transoms which may be extended to form comfortable berths at night. Aft of the stateroom and separated from it by a double door is the engine room, at the forward end of which are lockers on each side. On the port side of the engine room is a transom which can be turned into a berth at night, and aft of the transom are shelves for storage. The entrance to the engine room is by a hatchway and steps on the port side, and a very ingenious arrangement in the shape of a narrow raised platform bridging over the shaft allows the passage from one side to the other of the engine room at its after end, without going forward around the motor. This is a point, the advantage of which will be appreciated by every one who has ever taken count of the extra steps necessitated by the ordinary engine-room arrangement. The cockpit is eight feet in length, is self-bailing, has a semi-circular stern seat and stowage space under the floor. Zenda has six feet of head room in her cabin.







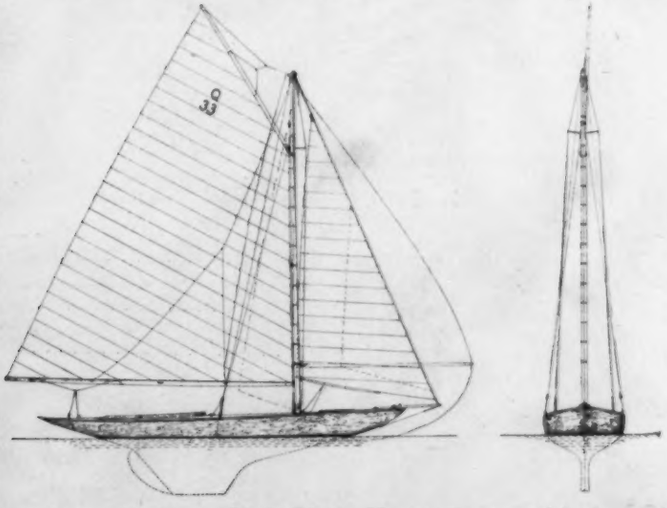
Little Rhody II

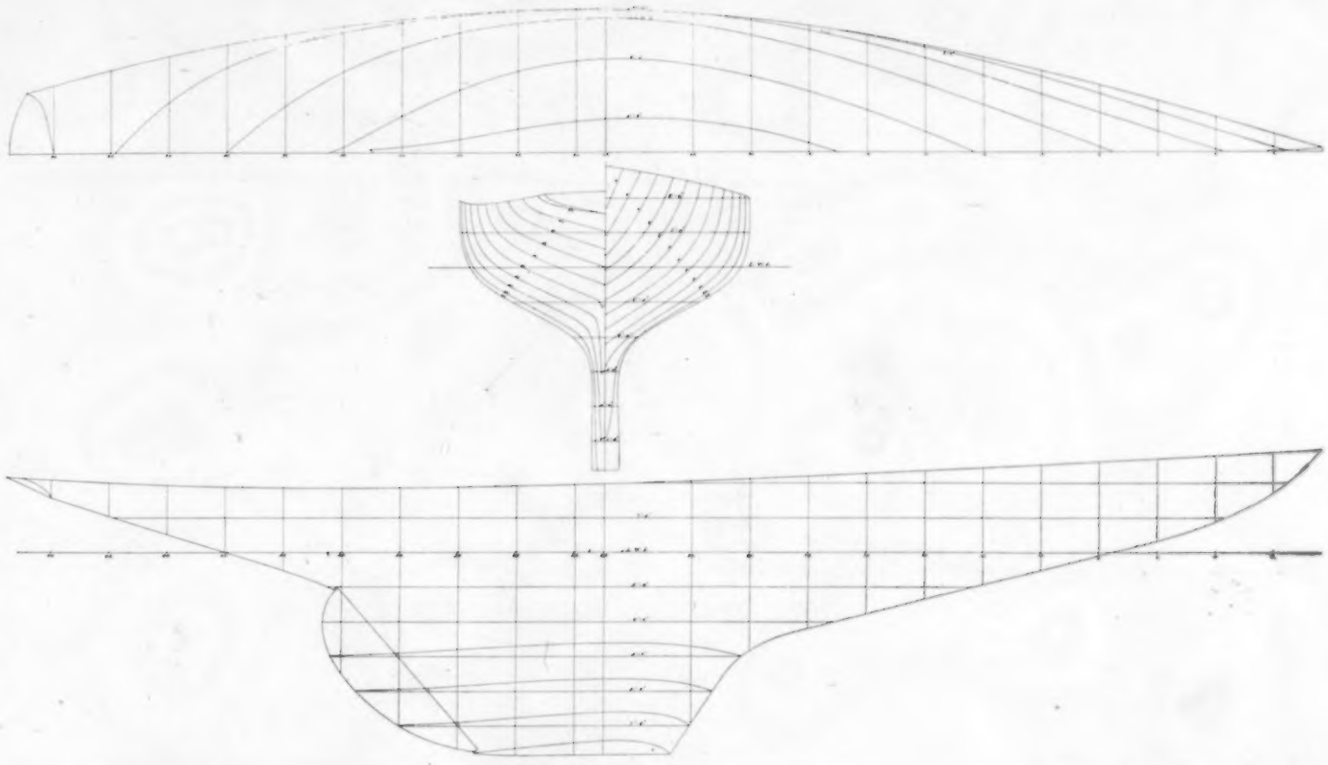
LITTLE RHODY II was designed by George Owen for Mr. Charles F. Tillinghast of Providence, R. I., to race in Class Q of Massachusetts Bay.

During the season's racing, Little Rhody II won ten first places, seven second places and ten third places out of 33 races started. She finished easily second in the championships of the Boston and the Corinthian Yacht Clubs and of the Massachusetts Yacht Racing Association. She won three out of four long distance races, besides winning the Exposition Cup at the Jamestown, Va., Races in September.

LITTLE RHODY II UNDER BALLOON JIB.

Although designed primarily as a racer, with large cockpit and no cabin house, Little Rhody II possesses surprisingly good accommodations for day sailing or cruising. She is easily the most comfortable and roomy of all the Eastern boats of her





class. Her cabin is fitted up with lockers, transoms, cushions, etc., in a substantial manner.

She was built to meet the requirements of the Class Q Scantling Association of Massachusetts Bay and has proven herself extremely tight and rigid under most trying circumstances, as a study of her construction plans will demonstrate.

35-FOOT SPEED LAUNCH UNDER WAY.

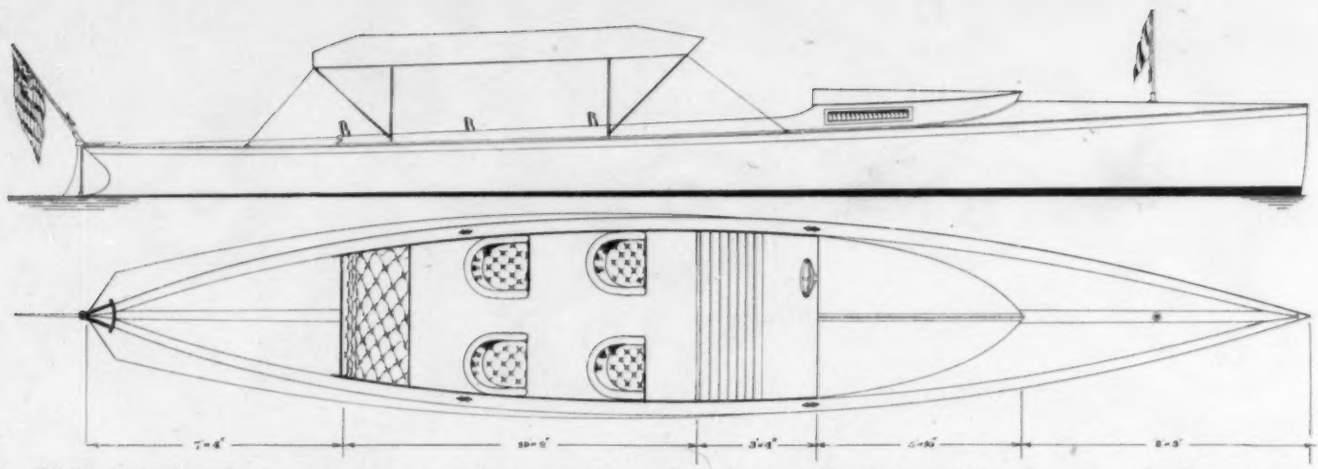
Thirty-five-Foot High Speed Launch

THE above illustration shows a 35-foot high speed launch, designed and built by the Electric Launch Company of Bayonne, N. J. Her dimensions are as follows: Length, 35 feet; beam, 5 feet 6 inches; draft, 1 foot. She has the long, lean body of a pickerel, and the first glance at her lines impresses the beholder with the idea of speed. Although speed has been the one thing worked for by her designer, she shows very comfortable quarters for six or seven passengers and is admirably adapted for a fast ferry boat service on inland waters between her owner's home and the railway station.

A long turtle-back deck and the hatch for her engines are situated forward and insure a reasonable amount of dryness even when going at top speed. The motor space is ventilated by means of side ventilators, situated, one in each side of the forward combing, obviating the necessity of the regular ventilation cowl. The easy chairs and the broad upholstered stern seat running across the after end of her cockpit, suggests roominess and comfort for the passengers and make her after cockpit an exceptionally pleasant place.

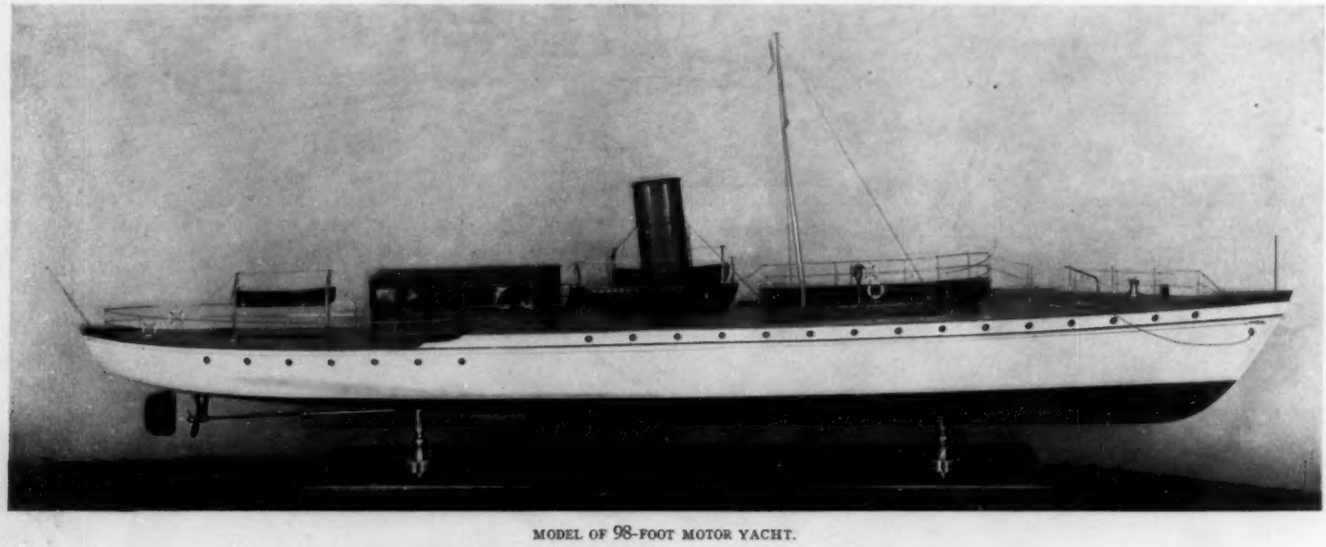
She is steered and controlled from the steersman's seat, a thwartship transom at the forward end of the cockpit and divided by a bulkhead from the passenger space. Her entire after cockpit is under an adjustable automobile canopy, which, while giving ample protection from sun or rain, by means of side curtains, may be instantly lowered and stowed in very compact shape.

Her power is furnished by Peerless Auto Marine six-cylinder engines of fifty horsepower, giving her a speed of twenty-two miles per hour, fast enough to satisfy the average person.



While she is fast, she is seaworthy to a marked extent for a launch of her type, and a glance at her bow and stern will show that she is more than reasonably dry.

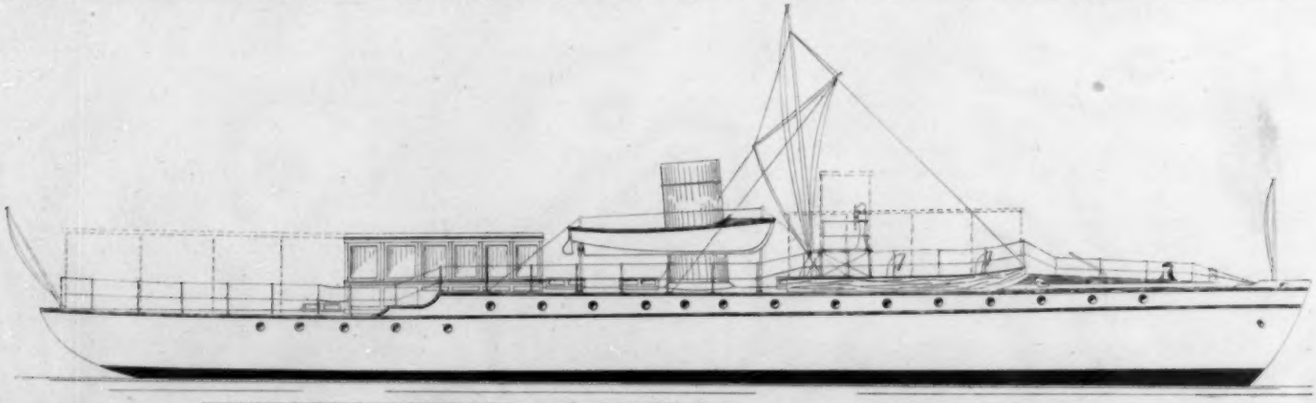
She represents a type of craft in which, to a high degree, speed, beauty and comfort have been combined, and her owner has a boat combining the qualities of a racer and a fast passenger boat. At the speed which she develops, the morning's run to business and the afternoon trip homewards is far pleasanter than by rail and almost as rapid, and to those situated on inland waters, she would offer an ideal method of conveyance.

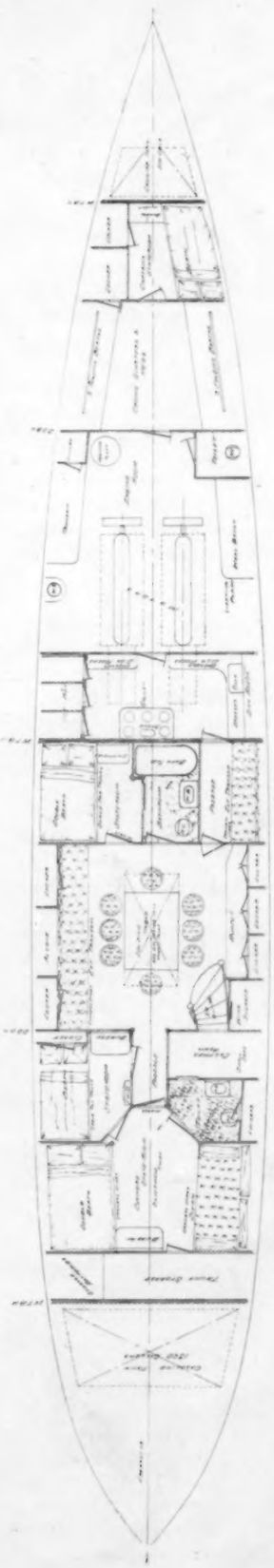


MODEL OF 98-FOOT MOTOR YACHT.

A High Speed Motor Yacht

THE conditions under which the designers, Whittelsey & Whittaker, Incorporated, worked in designing the 98-footer, whose plans and photograph we show herewith, were that she must be not over 100 feet in length over all, to enable her passage through the canals, and yet be of sufficient freeboard and seaworthiness to allow of coastwise cruising and even trips to the West Indies. These restrictions, in connection with the desire of the owner for ample stateroom accommoda-





tion for his own and guests' use and comfortable forecastle space for the crew, have been most admirably met.

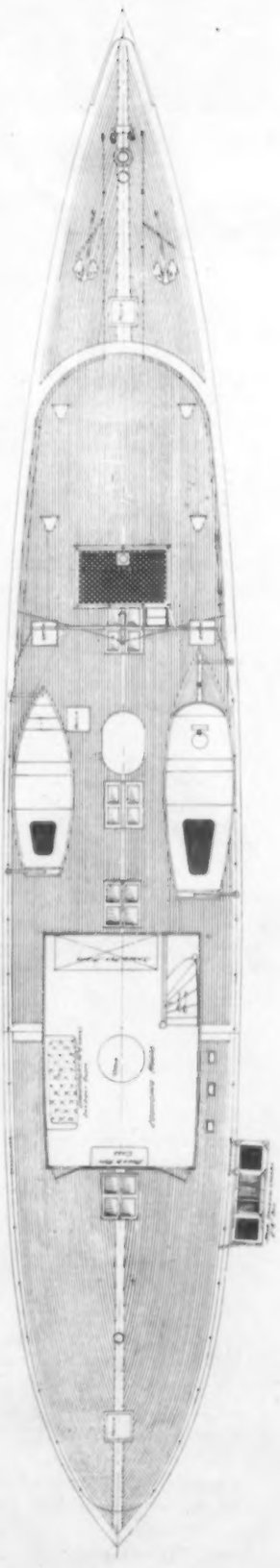
She is 98 feet over all, 15 feet beam and 5 feet draft. Her accommodations are equal to those to be found in a steam yacht of at least 125 feet in length, and her sea-going qualities are fully equal to those of a steam yacht of those dimensions. She is of the raised deck type, with a turtle deck forward, and, in the place usually occupied by the pilot house, there is a sun deck protected by an awning, from the after part of which rises a steering bridge supported on metal stanchions and high enough to be above a boarding wave in rough weather. At the break of the main deck there is the deck house, fitted up as a lounging room, with piano, table, davenport, book and gun case, and from this house entrance is had to the saloon, by means of a stairway, on the starboard side. Aft of the house is a large deck, sheltered by an awning.

A noteworthy feature of this craft is her ample amount of deck space, in spite of the fact that she is well lighted and ventilated by several skylights. Descending the stairs from the deck house, one enters the main saloon, which is equipped with a folding table in the center, and buffet, lockers and wine storage on the starboard and an extension transom with lockers on the port side. Underneath the dining table is a fresh water tank of 300 gallons capacity. From the saloon a passageway leads aft. On the port side of this is a guests' stateroom, containing double berth, bureau, folding wash-basin and clothes closet. The owner's stateroom at the after end of the passage extends the full width of the boat and contains a double berth on the port side with a divan with drawers underneath on the starboard side, and a bureau against the after bulkhead. A door in the after end of the owner's cabin leads into a capacious baggage storage room. At its forward end the owner's stateroom is connected with the stateroom already mentioned and with the owner's private bath. Still further forward is a large clothes room. A second guest stateroom, with double berth and chiffonier and large mirror in the door, leads from the forward end of the saloon, while on the starboard side is a passage leading to the galley. In this passage is an extension transom with drawers underneath, which may be used as a berth for a valet.

Between this passage and the forward stateroom is a large, well-equipped bathroom, with entrances from both guest-room and saloon. Forward of this is the galley, extending the full width of the boat, equipped with drawers, stove, large ice box and dish racks. Next is the engine room, which also houses the heating and lighting plant and has a work bench on one side and a transom on the other. In the crew's quarters and mess there are three folding berths on each side. Entrance to this is by a deck hatch and by a door in the engine room bulkhead. The captain's stateroom extends the full width of the bow. It is fitted with a berth, bureau and two large lockers. Chain lockers and a gasolene tank of 500-gallon capacity are situated in the extreme bow, separated from the rest of the boat by a watertight bulkhead. The engine room is fitted with two 150 horsepower motors, sufficient to give a speed of eighteen miles an hour. The boat fuel capacity is 1,500 gallons, allowing an extended cruising radius. Her military mast and funnel are arranged to lower when passing under canal bridges.

She is a concrete example of what the development of the gasolene engine has done for the yachtsman of the present day.

But a few years ago, the yachtsman who desired a craft of equal cabin accommodation, speed and seaworthiness, would have been obliged to use steam as a motive power and have been under, not only the initial expense of building a larger yacht, but also the greater cost of upkeep for both a larger crew and for fuel bills for banked fires when not actually under way. Not only in lessened expense, but in the absence of coaling trouble, she also shines, and her draught allows her usage in shoal water.



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Another Blow to the America's Cup as a Racing Trophy. There was much that was disappointing, and something of the pathetic as well, in the announcement of the Royal Swedish Yacht Club that it must for the present, because of lack of funds, abandon its plans to rechallenge for the America's Cup. The committee appointed to secure popular subscriptions failed utterly and has attributed its inability to get money to the general financial depression. The impression is none the less strong that even had there been no stringency in Sweden there would have been great difficulty in raising money enough for the purpose in hand. Opulent as our millionaires of the New York Yacht Club may be, they will not be unhappy, we think, that this ends any chance of a race in 1908. These are not the times when anybody feels like putting up such enormous sums as are required by the modern ninety-foot yacht entered in an America's Cup Race under New York Yacht Club rules. Is this not the time, therefore, for the Club to take a sober second thought in regard to this race? Why should not everything be done to enable persons of reasonably large means to compete? We are not, of course, advocating making it easy for any one who wants to find his way into "society" or to boom his business or to gain notoriety, to bring over a yacht and sail the waters around Sandy Hook under the eyes of gaping thousands. At the same time something must be done to induce the New York Yacht Club to change its rules and to recede from its present condition of insisting upon ninety-footers, or we may as well make up our minds to the fact that the chances of further racing for the famous old trophy are slight indeed. How long shall the yachting public wait for this matter to be decided? And how long will it be before the King of England, or the Emperor of Germany, or some American sportsman, presents a new trophy for international racing to take the place of America's Cup contests? So far as England is concerned, the unanimity of denunciation by the yachting press, of the present terms required by the New York Yacht Club affords ample confirmation for the belief of those who think that the day is far distant when a British challenger will again sail into this harbor, unless the universal rule be recognized as applying to America's Cup contests. Is there no young Lochinvar within the club, or perhaps from out of the West, to stir up this matter and urge reconsideration?

The Bermuda Cup Race. It is pleasing to note that in the plans of the Corinthian Yacht Club for the ocean race from Marblehead, Mass., to Bermuda, provision is made for the entry of yachts of largest size. This will, no doubt, insure a more adequate number of schooners of the highest type in the thresh to southern latitudes next June, than in any event since racing to Bermuda began. We cannot feel, however, that the admission of Class D boats (all yachts not over fifty feet length over all) is well advised. At the risk of being designated alarmists, we submit that the Gulf Stream is no place for racing craft thirty-five and forty feet on the water line. They have crossed this current, it is true, and more than once in races of this kind; so have rowboats crossed the Atlantic. But this is not the point. Any sport that is worth anything in a big, vital way, involves risk, but care must always be taken that the risk be not disproportionate to the end in view. And the end in the case under consideration, we take it, is an exhilarating, exciting battle of skill and hull over 675 miles of blue ocean. By all means, let us have it, as many of them as possible, but with boats whose size and wholesomeness is commensurate with the distance and possible, if not probable, conditions. Aside from this, we heartily congratulate Messrs. Carlton, Day and Morss upon the thorough way in which they have conducted the preliminary details, and we have no doubt that the event will be creditable in every way to American yachtsmen.

International Motor Boat Racing. Reports from abroad indicate that several British motor boat owners are arranging to cross the Atlantic next summer to race for the International Marine Motor Cup, won by Dixie, on Southampton Water, in England, last year and now in the possession of the Motor Boat Club of America. This, of course, will contribute to the joy of the nations and if, as has been rumored, German and French yachtsmen will also enter, the most important motor boat event ever held in this country will be assured. It will serve to bring the sport before the general public in a way that nothing else could, and dating from it we may look for a decided upward tendency in power boating affairs. As to the French, however, considering events in England last year, we are extremely sceptical of their participating in any contest in this country, for reasons that are well understood and therefore need not be named. It is only to be hoped that the time may come when an opportunity for suitable amends may present itself. That they will be made in such an event and eagerly, is beyond question.

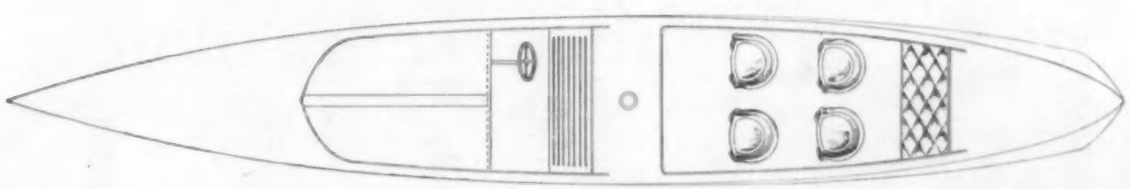
A Wholesome Change. While there is no definite way of forecasting the action of the Seawanhaka Corinthian Yacht Club in regard to the suggestion that the conditions in the rules governing races for the famous Seawanhaka Gold Cup be so changed as to eliminate the scow type, yet any one familiar with the spirit which has always characterized the Oyster Bay organization may be sure that the proposal will meet with every consideration, we might safely predict hearty acceptance. The Manchester Yacht Club, which won the trophy from the Royal St. Lawrence Yacht Club in 1905, after Americans had spent ten years in trying to bring it back to this country, is decidedly in favor of a wholesome type of boat. In fact, the request emanated from this club. The Canadian organization has coincided and, therefore, if the Seawanhaka yachtsmen, who originally offered the cup, consent, the next race for the trophy will be sailed between sane and seaworthy boats. If this proves to be the case, larger yachts will be built, and, all in all, the broad interests of the sport will be materially advanced. It is regarded quite likely that the Canadians, this winter, will send a challenge for the cup.

35-Foot **Elco-Peerless** Speed 22 Miles

Equipped with 50-H.P., 6-Cylinder Peerless Auto Marine Engine

The Elco-Peerless is the latest development in the Runabout Express type. In the refinement of boat and engine it would be hard to conceive a more perfect combination. A careful regard for comfort and safety of model based on past experience has been incorporated in the design and construction.

Exhibited at the New York Show, where two were sold—for use on Lake George and the Maine coast.



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Equipped with our own power, the ideal boat for lakes and rivers.

Motor Yachts

Equipped with high-grade gasolene engines, 25 to 150 feet

High-Speed Motor Boats

15 to 30 miles per hour guaranteed.

Order now for next season's delivery—The more time given the builder, the better boat he can turn out.
We furnish designs or build from your plans, as you prefer

Catalogue upon Request, 4c in Stamps. *Fifteen Years' Experience.*

THE ELECTRIC LAUNCH CO., Bayonne, N. J.

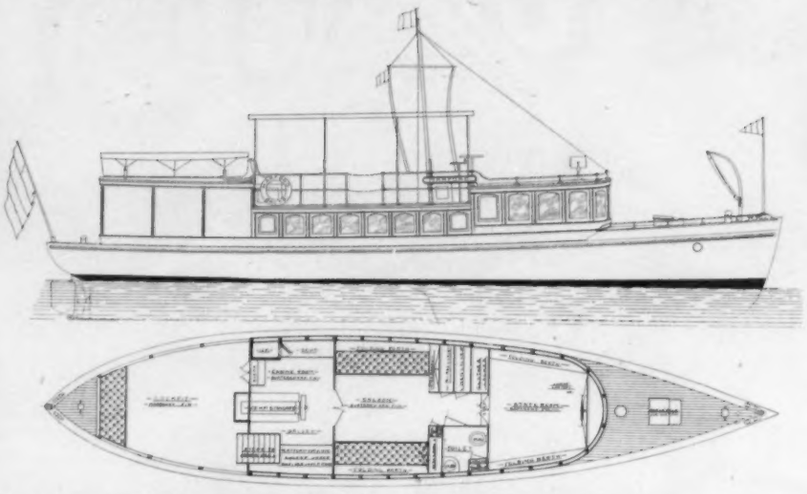
MEMBER OF THE NATIONAL ASSOCIATION OF ENGINE AND BOAT MANUFACTURERS

50-FOOTER HARFORD

THE HARFORD was designed and built by the Nilson Yacht Building Company of Baltimore, Md., for Mr. John F. Oldfield of Baltimore, Md.

Her over all length is 50 feet, her beam 10½ feet and she draws 3 feet of water. She is equipped with a 25 Horsepower Standard Engine, which gives her a speed of 11 miles per hour.

She is of the raised pilot house type, but her steering is done by means of an automobile wheel, which as well as engine control is placed at the after end of the pilot house roof and operated from a bridge deck. Aft of the pilot house, which is large enough to afford sleeping accommodation for two, is a low cabin trunk, the roof of which railed in by brass staunchions forms the bridge deck which is sufficiently large to accommodate a thwart-ship settee immediately aft of a steersman and several easy chairs. This bridge deck is covered by a portable awning. Aft of the low cabin trunk is a cock-pit with a standing roof, which, in time of bad weather, may be closed in with storm curtains. The standing roof is made sufficiently strong to allow its being used as a stowage place for a 10 foot dinghy, which is slung from davits on her starboard side. She has a military signal mast. The low brass railing, which incloses the forward deck, gives security when manning her windlass.



She has 6 feet 3 inches head room in her cabin, and bridge deck and cock-pit will accommodate a dozen people on a day trip, while her sleeping accommodations will take care of eight passengers and a crew of two.

Correspondence invited with those desiring the highest grade of construction.

The NILSON YACHT BLDG. CO., Baltimore, Md.

BUILDING AND REPAIRS TO HULL, MACHINERY AND RIGGING. MARINE RAILWAYS AND WINTER STORAGE.
SUPPLIES OF ALL KINDS.

Visiting Yachts Steer W. from Fort McHenry for 1 Mile. No Catalogues.

A Richardson Outfit which will give eight hours light, using 5-6 candle power incandescent lights

Lighting Talk Number 1

THE FIRST COST of an electric lighting system is about all that you have to consider. The cost of maintenance is practically nothing

A generating set giving six consecutive hours' illumination with six six-candle power incandescent lights all going at once, will take but one-fifth of one H. P. from your motor and reduces the speed of the propeller but three revolutions per minute.

It's like finding the current—and you can always find what you are looking for on the darkest night, and the safety alone of an electric light on a gasoline motor boat is worth more than the cost of the equipment.

Let us tell you just what it will cost to install aboard your craft an equipment which will light her thoroughly, operate your searchlight and insure a good fat spark in your engine.

We can go right into details if you will describe your craft, state the number of lights desired and the rated H. P. of your engine.

Richardson Engineering Co. ∴ Hartford, Conn.

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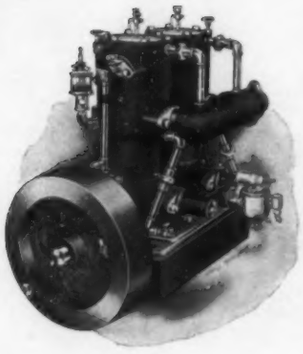
THE BULLOCK-WAIT CO.
86 Lake St., Chicago, Ill.

SEE OUR EXHIBIT WITH THE BUFFALO GASOLENE ENGINE, SPACE 118, CHICAGO MOTOR BOAT SHOW.



Motor Boat Supplement

New Ideas in Craft, Engines and Accessories

The National Boat and Engine Show. The National Boat and Engine Show held from December 7th to 14th, inclusive, at the Grand Central Palace in New York is already a matter of history.

It was, without doubt, the greatest and most successful motor boat show ever held in this country.

The finest lot of small craft—and some of them not so small for that matter—ever gathered together under one roof for exhibition purposes were displayed to thousands of people who were interested in boats, engines and accessories, and who came to see them.

It did not matter what particular line of aquatic sport interested a man, if he was a speed-craft enthusiast he could inspect at close range hulls and engines of winners of past events and compare them with those of craft which will probably make records during the coming season.

If he were one of the constantly increasing number who want to cruise comfortably in fair weather and in foul, there were shown for his edification, several types of cruising power boats, which combined the features of a comfortable home and a seaworthy yacht with all of the luxuries, comforts and conveniences that he might desire.

And it was not only the experienced cruiser or racing man who was taken into consideration when the display was arranged.

A man who wanted to commence modestly with a little runabout, a dory or a dinghy, even with a power canoe, could find, no matter what his requirements, or the requirements of the waters which he would navigate, the very type of craft most suited to his pocket and his needs.

And the boats were not all of the Exhibit by a large majority. There were engines of every conceivable horsepower, single and multi-cylinder, two and four cycle, engines for gasolene, engines for kerosene and engines in which electricity furnished the motor power.

If a man wished to install a gas or an electric lighting system in his launch, if he wanted to refit his galley with a new stove, if he wanted to see the latest thing in spark plugs, in dynamos, in magnetoes, in reverse gears or search lights, the latest and best ideas in those very accessories, were to be found there in charge of men glad and willing to explain their peculiar and distinctive merits.

And the crowd appreciated the good points of the show and the comfort and convenience of the arrangements of the exhibition hall.

The manager of the exhibition, Chester I. Campbell, made a splendid success of it and the exhibitors found the show a remarkably good advertisement, as it paid generously, in orders received, for the outlay and time and trouble which their representation therein cost them. No better guaranty of the success of the Chicago and Boston Shows to be held under Mr. Campbell's management can be given than the history of the success of the first National Boat and Engine Show which he gave to New York.

The Chicago Show will take place in the Colliseum, from January 1st to 8th, inclusive, and the Boston Show in the Mechanics Building, from January 25th to 31st, inclusive. Several firms who neglected to secure space in the New York Show have seen their mistake and signed contracts for space in Chicago and Boston.

A Standard of Excellence. The 25-horsepower engine, manufactured by the Standard Motor Construction Company of Jersey City, N. J., is of 6-inch bore by 8-inch stroke and develops over thirty-five actual brake horsepower at 350 to 360 revolutions per minute. It has been the policy of the Standard Motor Construction Co., not only to sell the bare engine but also the full equipment necessary for a proper marine gasolene engine installation. This, a customer only fully appreciates after purchasing an engine and installing it himself.

This type of machine is one of the most popular of the smaller sizes, being a heavy, slow speed engine, which develops an excess of its regular power, and, owing to the number of revolutions which are generally required by the heavy, slow speed launch hulls of the cruising type, the most efficient propeller design is obtained, and, therefore, the most efficient engine adaptable to the hull.

There are several features in this developed product well worthy of consideration. One is the circulation system of water. The water passes externally from cylinder head to cylinder without going through the cylinder head packing, so, should that packing leak, there is no possibility of water getting into the cylinder

The mechanical lubrication with an individual feed of oil to each cylinder and bearing is another feature. There being no dependance on crank-case lubrication the engine may be set in the boat at an angle, with good results, each bearing and cylinder getting a clean drip, mechanically apportioned by the lubricator, so that when the engine is running fast the lubricator increases its supply of oil to the several parts and lubrication ceases entirely when the engine stops.

The magneto is a low tension gear driven machine. The number of revolutions of the magneto and of the crankshaft are identical, thereby preventing the throwing of unnecessary wear upon it at a high speed. Being gear driven there is no possibility of its slipping as in friction drives. The magneto is so arranged that its voltage is high and the amperage is low, and does not eat away the contacts of the sparkers which are tipped with iridium and will last for years with this current.

All the light steel parts in the engine, such as cams, gears, nuts, igniter parts, etc., are of case hardened steel. All steel parts such as are used on magnets and the magneto, studs, special screws and bolts are manufactured by the Standard Co., of selected steel for their individual purpose.

The materials of the cylinder and other castings of the engine, such as the bearing metal, etc., are all selected from the very best materials to meet the requirements of the service and are tested carefully at the factory.

The circulating pump is driven from the valve shaft of the engine at one-half of the engine speed and under this slow speed does not pound the check valve. The check valve has large disc checks, doing away with the ordinary boiler and check, generally used on gasolene engines.

This engine has a governor so constructed that in operation the propeller can be disconnected without the engine turning and thrown in rapidly without overloading, as the governor adjusts the variations of the load automatically.

The reverse gear is of heavy construction, which can be thrown from full speed ahead to full speed reverse at any time. Enough margin of stroke in speed is allowed so that there is no danger when backing of hitting any submerged substances.

All bearings in the main engine are of the very best phosphor bronze. In the machining of the bearings they are carefully relieved on the sides and have large oil grooves cut in.

The crankshaft is well housed, having a bearing in between each crank. The crank itself is of forged steel and is cut and finished from the solid block.

The connecting rods are all forged steel and their bearings are of phosphor bronze; the wrist pin bearing is of phosphor bronze running on a hardened and ground wrist pin; the packing rings are of cast iron, ground on each side; also on the diameter in their sprung position.

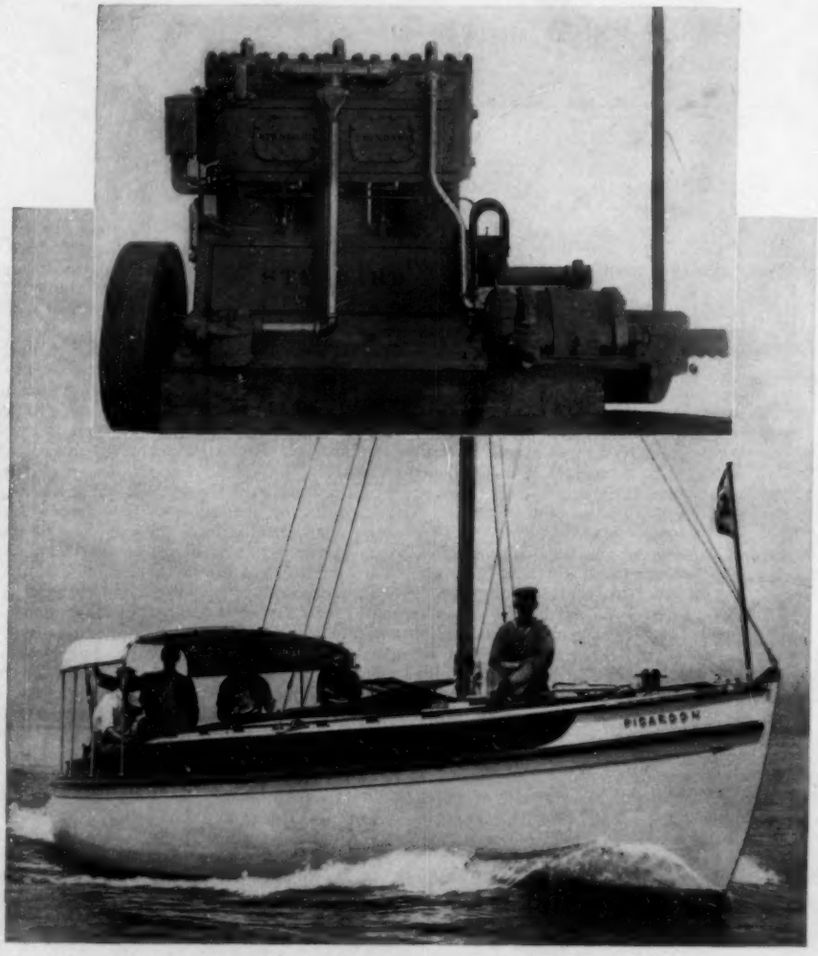
All parts of the engine are carefully water-jacketed, allowing for full circulation and there are no hot or otherwise dangerous moving parts around the engine.

For the Electrical Equipment. We have all had our battery troubles, sometimes they were due to the faults of the batteries, sometimes to our own carelessness, and sometimes to the manufacturer supply-

STANDARD MOTORS

Take First and Second Place in the Marblehead Race of 270 Miles

18 H. P. Standard Motor in the "Picaroon."



The Winner, "Picaroon" 39 ft., 10 in., Equipped with 18 H. P. Standard Motor

The Picaroon Wins Equipped 18 H. P. Standard
The Irene Second Equipped 12 H. P. Standard

The results again show what may be expected of a "STANDARD MOTOR" in the hands of the individual owner.

WRITE FOR LATEST CATALOGUE

The Standard Motor Construction Co.
180 Whiton Street, Jersey City, U. S. A.

ing us with something that required an electrical expert to manage.

The Edison Manufacturing Company of Orange, N. J., has produced a line of batteries with which they have endeavored to steer clear of all three of the above causes. These batteries are built with the idea that they shall deliver a perfectly steady and constant current while the engine is in operation without waste or local action when not in use; that they should have a long life and be available for actual work ten hours per day for several months, without need of renewal; that the original cost shall be low and that the battery shall be simple in construction and easily renewed by those without technical electrical knowledge. The batteries consist of a copper oxide plate contained by two grooved copper supports held together with a copper bolt at the bottom of the oxide plates forming a positive pole, and two zinc plates forming a negative pole, the whole to be suspended from the cover. The charging liquid is a solution of caustic soda covered with a layer of oil to prevent evaporation and creeping. The cells are made in three sizes, (Z, V and AQ), each having enameled steel jars and liquid-tight covers. Four or five AA, five to six V cells and six to seven Z cells usually form an equipment. The advantage of the larger cells is that a smaller number are required, and the life of the battery is longer, while, on the other hand, the good points of the smaller cells lie in the fact that they are lighter in weight, occupy less space and hence lend themselves more readily to the storage problem, as presented by the smaller craft.

Double Cabin Cruiser. The after cabin is the feature of this boat enabling her to ride the heaviest following seas as a lifeboat. It gives added security to the cockpit, more locker room, or room for two additional bunks if size be increased a trifle. Another feature is the motor box giving accessibility to the engine without going into the cabin. It also serves as a seat for the helmsman. The flywheel and other parts of the motor are also accessible from the cabin. This plan of placing the motor

BONNEY'S DOUBLE CABIN WHALEBOAT CRUISER.

saves the space ordinarily occupied by it in the cabin or galley. The fuel tank is situated under the after deck thereby taking the weight from the bow. This is a great advantage in a heavy chop, giving the boat a chance to rise in a sea, instead of sousing under. Another feature is stowage space for oars and boat-hook between the projecting sides of the two cabins and the cockpit coaming. Oars are necessary adjuncts to a sea-going cruiser and not the easiest things in the world to stow. The forward hatch is for handling the anchor. Her model is easy to drive and her guaranteed speed with 11-h.p. motor is eleven miles per hour.

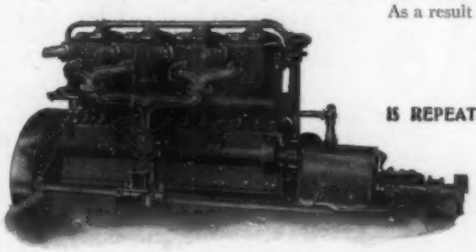
She was designed by John C. G. Bonney, of 21 Platt St., New York.

This is Important to You

Perhaps you know that the U. S. Government selected the Jager engine for use in the navy, the Revenue Cutter Service and the Department of Commerce and Labor for special service in the Arctic, the Temperate and Torrid Zones.

But here is the most important point to you: Very careful records of the performance of the Jager Engine have been kept in each of these departments for the guidance of various other departments in the purchase of gasoline engines

As a result of this painstaking care, the



Jager Marine Engine

IS REPEATEDLY SELECTED, WHILE OTHER MAKES, SUBJECTED TO THE SAME TESTS ARE DISCARDED

This means something to YOU if you need boat power. You can get a Jager Engine of any size from 3 to 60 H.P. and have the comfortable feeling of knowing you have the best there is to be had.

WE MAKE 1, 2, 3, 4 AND 6 CYLINDER ENGINES

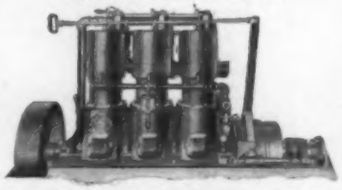
Write for illustrated catalogue containing information you ought to have. Also send for special pamphlet on our MARINE TYPE DIRECT CONNECTED UNITS for the electric lighting of yachts.

Charles J. Jager Company 281-283 FRANKLIN STREET, BOSTON, MASS. or, 33 CANAL STREET, PROVIDENCE, R. I.

THE STRELINGER MARINE ENGINES

(4 Cycle—1 to 4 Cylinder)

Lead in Every Point of EXCELLENCY



Mechanical or Jump Spark Equipment

For Durability Reliability, Economy, Power and Ease with which the engine can be controlled, the STRELINGER stands at the Head.

Consider these important features when placing your order. Our engines are built for the man who wants an absolutely reliable engine at a reasonable price. Write for catalog. Our prices will interest you.

THE STRELINGER MARINE ENGINE CO. 46 FORT ST. E., DETROIT, MICH., U. S. A.

FAY & BOWEN - Motor Boats

A 1908 WINNER

The Fay & Bowen 25-foot "Special" shown above is the handsomest thing in its class for 1908.

Copper-riveted, all woodwork counterbored and plugged, entire top and interior finished in mahogany.

Fitted with a Fay & Bowen 7 H. P. double cylinder engine it develops a speed of 10 miles an hour, and it *actually makes it*, over a measured course. Steering wheel both at bow and at side. Engine speed controlled both forward or aft of engine.

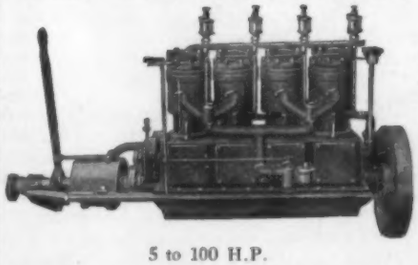
Photographs and blue prints sent on application.

Fay & Bowen engines are reliable, simple and not sensitive. The Chicago-Mackinac endurance race for 1907 was won by our engine.

If you want a motor boat or marine engine you owe it to yourself to write for our free catalogue.

FAY & BOWEN ENGINE CO., 115 Lake St., GENEVA, N. Y.

The Monarch Kerosene Engine



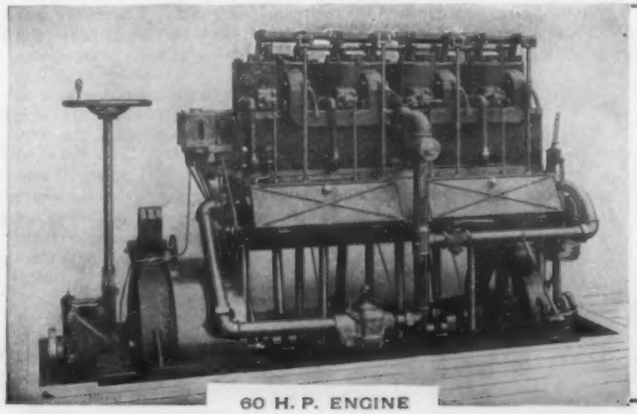
It leads them all in durability, cheapness of operation and general results.

Your correspondence solicited.

Send for Catalogue

5 to 100 H.P.

Grand Rapids Gas Engine & Yacht Co.
100 Front Street, Grand Rapids, Mich.



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Gasoline Yachts & Engines

NOTED FOR RELIABILITY

Tregurtha Water Tube Boilers, Steam Launches & Engines

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On transoceanic steamers, private yachts, motor and sailing pleasure boats, those spaces are most elegant and attractive and provide absolute sureness of footing, which are covered with
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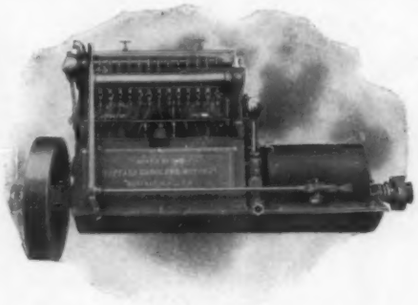
YACHTS IN WAR.

(Continued from page 15.)

Guanica and Arroyo. What particularly distinguished her conduct from that of the other converted yachts was her part in the Battle of Santiago, on July 3d, 1898. Nothing could be more matter of fact, yet more picturesque in its cold recital of details, than the report of Executive Officer Huse to Commander Wainwright on that occasion. Here are some extracts:

"At 9.43 A.M. the Gloucester, then being about 3,000 yards southeast of Morro, the officer of the deck reported that the Spanish fleet was coming out of Santiago. . . The battleships, Iowa, Indiana, Oregon and Texas and the armored cruiser Brooklyn, were engaged with the four Spanish vessels, Cristobal Colon, Oquendo, Viscaya and Infanta Maria Teresa (flag), all standing to the westward under full head of steam. . .

"When the larger vessels were well clear and the rear one about 1,500 yards to the westward of Morro, the destroyers, Pluton and Furor, came out and followed in their wake. At once we opened fire on them from the starboard battery at a range of 2,500 yards and the engines were run at full speed, the ship heading about N.N.W. Presently, signal was made from the Indiana. 'Gunboats will advance.' After this signal it appeared that the fight between this ship and the two apparently uninjured destroyers was a thing apart from the battle in which the larger ships were engaged. The starboard forward guns (one 3-pounder and two 6-pounder rapid-fire) were turned on the leading vessel, Pluton, while the starboard after gun and the stern gun (both 3-pounder rapid-fire) were aimed at Furor. The speed of Gloucester was gradually increased to over 17 knots, and then we were slowly overhauling the torpedo-destroyers and closing in toward them. The fire from both sides was vigorous, but while many shots struck the water close alongside or went whistling over our heads, we were not hit once during the whole engagement. This is the more remarkable as the monotonous reports of an automatic gun could be heard after the 2,500 yard range was passed and the zone of fire could be distinctly traced by a line of splashes describing accurately the length of the ship and gradually approaching it. But at a distance variously estimated at from 10 to 50 yards, the automatic fire suddenly ceased. It was afterward found to be from a 1-pounder Maxim, and the execution aboard would have been terrible during the few minutes that must have elapsed before the ship was sunk, had the fire reached us. Meanwhile, the service of our own guns was excellent, and at a range of 1,200 yards, the two 6-millimetre automatic Colt rifles opened on the enemy. Pluton had now (about 10.15) slackened her speed, showing evident signs of distress, and our fire was concentrated on Furor. The range was decreased to 600 yards, and at this distance the majority of shots appeared to strike. Pluton was run on the rocks about four miles west of Morro and blew up. . . Furor soon commenced to describe circles with a starboard helm, her firing ceased, and it became apparent that she was disabled. A white rag was waved from forward and we stopped firing. Lieutenants Wood and Norman and Assistant Engineer Proctor were sent to rescue the crews and see if the prizes could be saved. They found a horrible state of affairs on Furor. The vessel was a perfect shambles. As she was on fire and burning rapidly, they took off the living and then rescued all they could find in the water and on the beach. Pluton was among the rocks in the surf and could not be boarded, but her crew had made their way ashore or were adrift on life-buoys and wreckage."



Ready for 1908?

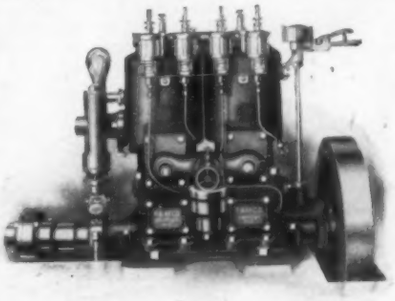
Better start to think about next season. Our 1908 Catalogue will help you—it's ready December 1st and is sent free on request.

Engines for any size or type of boat—Regular Type built in sizes from 2 to 100 H. P., and Slow Speed Heavy Engines from 6 to 36 H. P.

The "Buffalo" was the talk of the New York Show. Will also be at Boston and Chicago.

Write for Catalogue NOW stating your requirements.

Buffalo Gasolene Motor Co., 1260-1272 Niagara St., Buffalo, N. Y.



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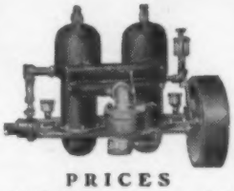
Reversible Engines

ALWAYS LEAD

Termaat & Monahan Co., OSHKOSH, WIS.



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IS AN ADDITION

No. 1 Self lubricating connecting rods
No. 2 Neat design
No. 3 Simplicity
No. 4 Starts readily in any climate

TOTAL FACTS—The above, with a bona-fide guarantee of satisfaction has made our Motors the envy of all manufacturers. WE MAKE GOOD from start to finish. WHY? Because a miss-fire is as rare as a complaint. After thorough inspection of the most minute detail, an engine turned out by us is not a speculation—but a certainty

PRICES

1½ H. P. Complete - -	$ 65
3 H. P. Double Cylinder	125
5 H. P. Single "	125
10 H. P. Double Cylinder	225
16 H. P. " "	300

AMERICAN MOTOR CO. EAU CLAIRE, WIS.

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For a Few Weeks

Knock Down Frames 18 ft. to 25 ft., **$25.00 to $55**

Frames set up ready for planking, 18 ft. to 25 ft., **$30.00 to $60.00**

Frames Planked, Caulked, Payed, painted deck and coaming, 18 ft. to 25 ft., **$70.00 to $140.00**

Complete Finest Hulls 18 ft. to 25 ft., **$115.00 to $250.00**

Complete with Engine, 18 ft. to 25 ft., **$200.00 to $450.00**

Write or call for Catalogue and Further Particulars

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Neptune Avenue, Foot West 12th Street
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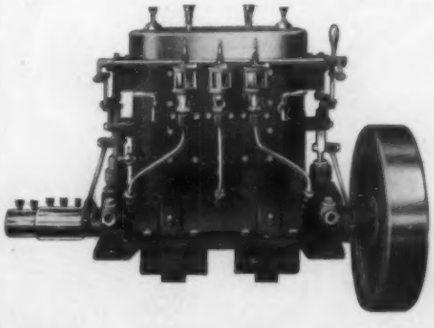

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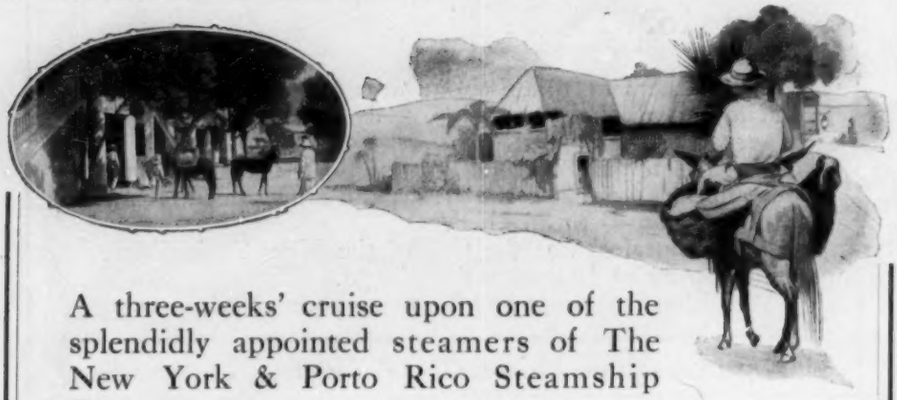

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The special tourist rate for this cruise is $140 which includes every expense.

Write for illustrated booklet giving details of the voyage and containing attractive pictures of Porto Rico.

The New York & Porto Rico Steamship Co.

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Surely Gloucester baptized those Spaniards with fire.

Hermione was a 270-tonner and measured 154 feet over all. She was of steel, had a schooner rig and was owned by the estate of H. L. Pierce, of Boston, when the government took her. But Hermione was too pacific a name for this business, so they renamed her Hawk and sent her out to search the sea for the bold Spaniard. For days she scouted about with "nothing doing" then her chance came. Early in July she espied a 6,000-ton ship which later proved to be the transatlantic liner Alfonso XII. The big fellow was running for shelter under the guns of Mariel. Hawk gave chase, following the enemy almost into the shadows of the frowning fortress. In the harbor she discovered two gunboats. But she did not seek aid until she had lowered a small boat and despatched it with a crew of six men to get the liner's name. In the high light of the tropical noon they pulled, amidst a raking fire from the machine guns of the foe to within a ship's length of the merchantman. In fact, they got so close that they could hear the spoken orders on the Spaniard's deck. Then Mariel and the gunboats joined in the fire, and at last, when things were becoming discouragingly hot for Hawk, the gunboats Prairie and Castine came and put the enemy out of business. On another occasion—July 30th—Hawk espied an 800-tonner, flying the French flag and making tracks for the east. Altogether the stranger was suspicious. She neither looked nor acted like a Frenchman. So Hawk overhauled her—and lo and behold, she proved to be a Mexican of the name of Tabasqueno, full to the hatches of coal, provisions and other good things, designed for the aid and comfort of the enemy—something the Hawk did not approve of—so she gathered her in. This was off Sagua la Grande. Her fighting blood up, Hawk entered the harbor after a dozen or more small ships and smacks that lay innocently basking in the sun but which she believed to be none too good on which to turn a contraband dollar or so. But these fellows proved to be less somnolent than they appeared, for on the approach of Hawk they scurried into shoal water like so many water beetles and all but one escaped. However, Hawk got the Tabasqueno.

Alicia, Mr. H. M. Flagler's yacht that was war-named Hornet by the government, to make her psychologically more formidable, did good capture work. On August 6th she took Salve Maria off Francis Key—near Isle of Pines—and put a prize crew aboard.

MOTOR BOAT DESIGN AND ITS RELATION TO SPEED.

(Continued from page 27)

tage over the air ship in that its propeller is constantly working in a fluid of considerable resistance, its own resistance to advance, when once it has risen sufficiently, is largely composed only of the frictional resistance of its supporting planes, as its eddy and wave making resistance in the water is practically annulled and replaced by the air resistance which is, by comparison, inconsiderable in magnitude. The air ship on the other hand derives its propulsive force from a propeller acting in the very yielding atmosphere, while its resistance is that due to its motion in the same fluid, hence is, compared to the propeller force, a considerable quantity. In making this comparison, motion in an undisturbed atmosphere only is discussed, and the motion of an air ship moving at a constant level above the earth; when air currents, and the soaring possibilities of the air ship running down from a higher to a lower level are taken into account the analogy no longer holds.

Working on these ideas there have lately been built a number of vessels, if one may call them so, variously known as gliding boats or hydroplanes, that have developed phenomenal speed For this successful application it would seem, unless size of boats is enormously increased, that this type depends absolutely upon operating in smooth water. When running under these conditions the possibility of a further enormous increase in speed with this type of craft is easy to grasp but, the actual limitations in this direction are difficult to estimate, as the problem is one of such complexity.

For the present, at least, the development of the hydroplane is more of interest from a purely scientific than from a practical point of view. The second problem of producing a vessel that under ordinary conditions of weather will beat her competitors in a speed contest is the one that demands our close attention. As already stated, many forms of hulls have been tried in competition when fitted with engines of enormous power. These hulls run from an ordinary well modeled design of the usual vessel form, having narrow beam in proportion to length, small displacement, easy entrance and run but no especial features, through all manner of shapes to the other extreme bordering upon the hydroplane itself where the usual vessel form is practically disregarded and the lifting action is sought for at the expense of the seagoing qualities. All manner of shades and difference in form have been tried, some with more and others with less success. With the powers that have so far been installed, the variation in speed of these different types has not been so marked as one would expect. The most definite conclusion to be reached from considering the matter carefully is that, as stated, weight is of the utmost importance, the designer being better able to concentrate his energies on reducing his weight of hull and engine, than to devote his time in improving the form of his vessel. It also is to be seen that in general, if the weather conditions are not too severe, the more extreme form of hull in which the lifting action is utilized, has with the same displacement and power, had the advantage over the more normal type. There is no doubt that as the horsepower installed in relation to the weight of the boats is still further increased, the advantage of the more extreme type will be accentuated, the only factor opposing its success being the conditions of the water in which the lack of seaworthiness will work to its advantage.

In conclusion it may be repeated that, for the designer of a high speed motor craft, the important fact to bear in mind is the greatest possible reduction in weight of completed vessel, associated with the form of hull that will give the greatest possible lifting action consistent with the necessary seaworthy qualities imposed by the particular conditions under which the vessel is to be used. These deductions only apply to cases in which extreme power is installed on the lightest possible weight. Should these extreme forms be tried with insufficient power, or excessive weight, results will be secured far inferior to those obtained in vessels of less radical design. The hull suited for hydroplane action will have excessive resistance at low speeds and is only of use when the power is so great that the boat can be forced through these unsatisfactory conditions and reach the point where by her lessened immersion, her resistance will not increase so rapidly as will that of the more normal vessel and hence the still unexpended portion of her great power can be utilized in getting additional speed instead of in producing the enormous waves that follow all attempts to drive any ordinary ship-shaped hull beyond a certain definite speed.

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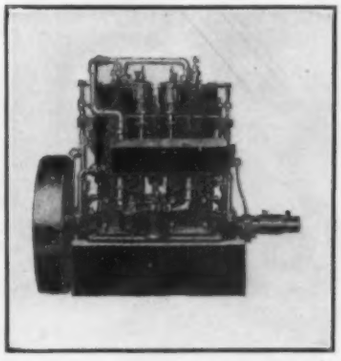

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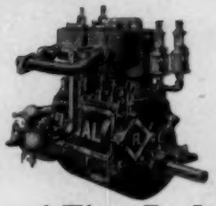

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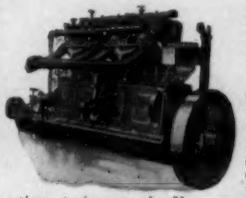

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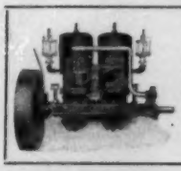

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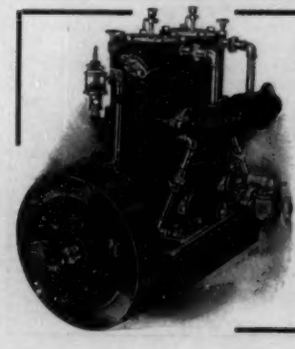

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AROUND THE HORN—THE LOG OF A SECOND MATE

(Continued from page 31.)

shoes, three for food—and debauch with the munificent remainder.

The law has been changed since this voyage.

A pauper in a strange city, he must choose between two things—starvation or the boarding house. The "crimp," or boarding master, awaits him and to him he falls an easy victim. The "crimp" wants men, and will let him live at his house until he is in his power and, then furnishing a ship with men at so much per head, he ships him, and takes his advance money to pay his debts, leaving him enough for a final spree to make him forget his miseries and remember that the "crimp" is his best friend.

This is the life of a sailor on shore, and at sea, I will try to show what it is in the crack yankee clippers.

After the men were searched for hidden liquor, about enough to fill a three-gallon demijohn being found, all hands were turned to and the lines cast off from the dock. A tug passed a line to our stern and the ship drew slowly out in the stream. Tom, who had just arrived, jumped into the mizzen rigging and we shook hands for the last time. As we reached the end of the dock, he jumped back and disappeared in the crowd that were watching the ship leave. The stars and stripes fluttered from the peak of the monkey-gaff, and with no noise but the puffing of the tug and the deep voice of the captain, we were off.

To leave in such silence was depressing, and I longed for a gun or a pack of cannon crackers, or something, to "cheer" with. I looked at the dock and on the front I thought that I saw something white fluttering. Seizing the glass in the wheel-house I looked again. There sure enough was one poor lone handkerchief fluttering, and the owner of it was none other than my brother Tom.

We dropped down the bay and anchored until the next tide, for as we drew over twenty-five feet of water, it was not safe to cross the bar on the ebb. In getting away from the dock we lost a man overboard in a curious manner. The headline, made fast forward, was brought aft just outside of the channels. It was stopped at each rigging, and as the ship cleared the end of the slip, it was let go stop by stop. One of the men did not hear the order to "stand clear;" and as the line was cast off from the mizzen it caught him unawares, and parting his stop, with the whole power of the tug on it, it took him across the body and threw him fully fifty feet into the air. He landed in the water, but in an instant he rose unhurt and struck out for the shore. There was a tow of barges passing at the time and he managed to board one of them before anything could be done to stop him, and in a few minutes, as they drew up to the dock, he jumped ashore. Unfortunately for him he was found while we were at anchor down in the bay and brought on board by the indefatigable "crimp," thus losing the chance of making off with his "advance."

At one o'clock in the afternoon we hove up the anchor and, after having our photographs taken by an ambitious newspaper reporter, said good-bye to the "crimp" and his followers and towed slowly down the bay. At four we passed over the bar, and after backing the main yards to put the pilot off, stood away to the course of East by South, before a stiff N. W. wind that drove us along at the rate of ten knots an hour.

The mate called the crew to muster that evening at six bells and, after the watches were chosen, he made them a little speech: "Men," he said, "you can make this ship your home if

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you want to, all you have to do is to obey orders and answer when you are called, no matter what happens. Otherwise, this ship is going to be a floating hell." He then gave all hands a drink of a vile liquid, that one of them had smuggled on board.

Just how this time-worn custom originated I do not know. It is still in vogue. The sailors, standing in a pitiful ragged group make a picture almost tragical. Many could not understand, many had heard the old threats before and glowered sullenly at us, all the dull brute passions showing so plainly that even the least discerning officer could tell that trouble could only come from the threatened abuse.

Overhead the great spars towered, the topsail yards huge above the mighty courses, the swaying shadows upon the deck planks making grotesque figures. It was a strange picture, the beginning of a new life for all hands, a life of desperate endeavor and dreadful work. Yet under all there was a feeling of mystery, a peculiar haunting sensation of something to come. The life ahead would be so different, so full of the exciting possibilities of the sea. ,

I chose my men regularly and they took their drink doggedly without any show of emotion. Then we dismissed them and they went slowly forward to follow their watches as the law of the sea decreed.

Then I turned in to get what sleep I could and to make up my routine.

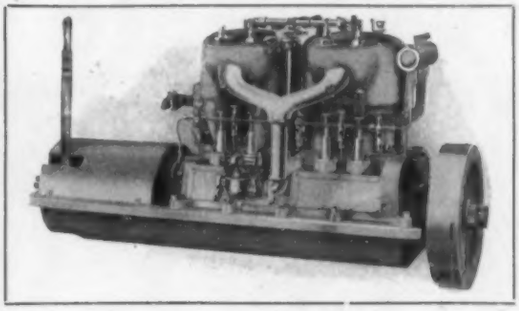
ONE-DESIGN RACING CLASS

(Continued from page 23.)

of a boat that wins the greater number of races, but fails seriously in other races. The main point is to give a special interest to the end of the season.

An interesting variation of the ordinary scheme of racing is a series of helmsmen's races. That is, arrange a series of as many races as there are boats in the class. In the first race, let each owner sail his own boat. In other races let the men exchange boats, so that at the end each man will have sailed each boat. Whatever prize may be offered goes to the helmsman winning the most races; or the greatest number of points, if the point system be adopted. The result of such a series will generally disabuse a chronic loser of any feeling that he may have, that some other fellow has the better boat, especially if the races be short ones, and all sailed in one day, with steady weather conditions. In a set of helmsmen's races at Manhasset Bay, four or five years ago, the skipper of one of the boats won the first race with his own boat, and then in succession took each of the other boats and defeated his own boat, as well as the rest of the fleet. At Larchmont, in the season of 1906, an owner lost the first race with his own boat, but won all the other races with other boats taken in succession. In any event the result generally shows a "tail ender" that his lack of success is due, not to any inferiority of his boat, but to his own lack of skill, and also usually stimulates such an unfortunate skipper to renewed efforts toward learning the game.

It is just as well, but not important, that in the contemplation of a one-design class, some attention should be given to the future of a boat, after the interest in the class has waned. Classes will break up, in the course of time, because some of the owners will become tired of their boats and will sell them to persons who are not members of the club. Such action will leave other owners with boats on their hands, for which there are few or no opportunities of racing. If the boats are so planned at the outset as to measure into a regular class without disadvantage, they will still have some chance for competition after their service as a one-design class has ended



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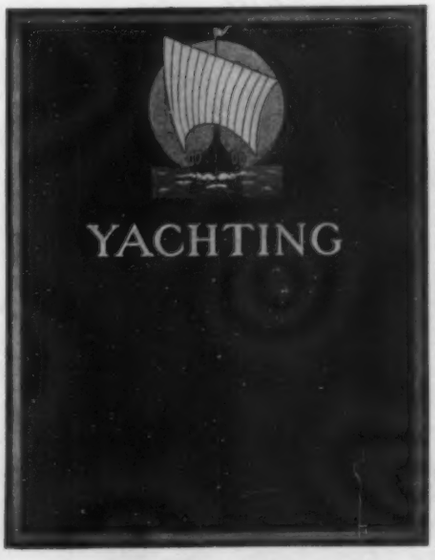

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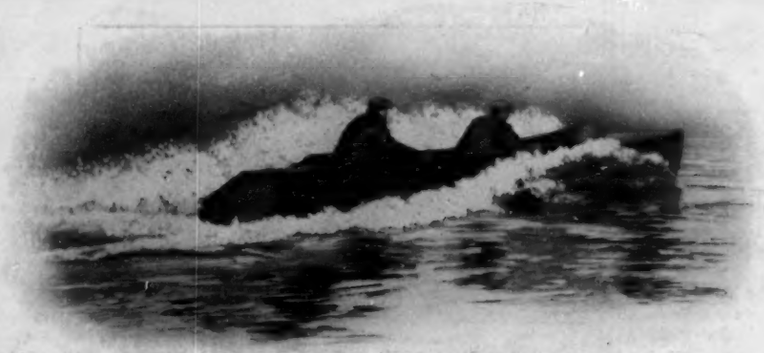

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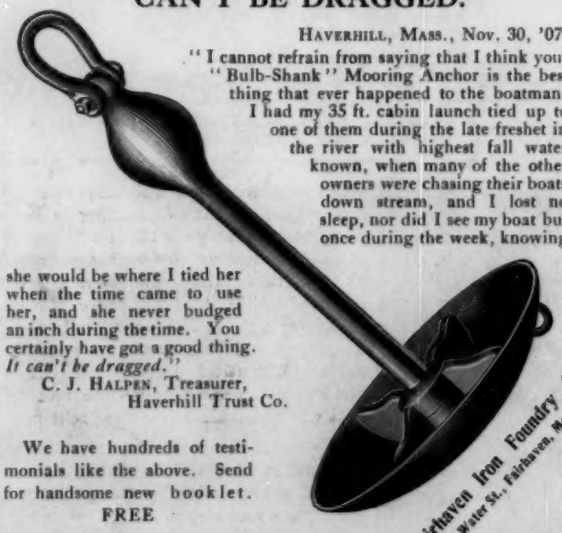

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